

Genus Holocentrus Gronow

Holocentrus Gronow, Zoophylacii, p. 65, 1763. (Type Pereca adscensionis Osbeck = Holocentrus sogo Bloch, designated by Jordan and Gilbert, Bull. U. S. Nat. Mus., no. 16, p. 459, 1883.)

Holocentrus Scopoli, Introd. Nat. Hist., p. 449, 1777. (Atypic. Type Holocentrus sogo Bloch, designated by Whitley, Rec. Austral. Mus., vol. 19, no. 1, p. 68, August 2, 1933.)

Holocentrum Cuvier, Règne Animal, ed. 2, vol. 2, p. 150, 1829. (Type Holocentrus sogo Bloch.)

Farer Forskål, Descript. Animal., p. 44, 1775. (Atypic. Type Sciaena sammara Forskål, assumed by vernacular name. Inadmissible.)

Eritrinus (Plumier) Lacépède, Hist. Nat. Poiss., vol. 4, p. 87, 1802. (Type Holocentrus sogo Bloch, monotypic. Inadmissible.)

Erythrinus (Plumier) Lacépède, Hist. Nat. Poiss., vol. 4, p. 347, 1802.

~~Corniger Agassiz, Desc. Brasil. Pix,~~
~~p. 119, 1826. (Type Corniger spinosus~~
~~Agassiz, monotypic.)~~

Rhynchichthys Valenciennes, Hist. Nat.
 Poiss., vol. 7, p. 378, 1831. (Type
Rhynchichthys pelamides Valenciennes,
 monotypic.)

Rhynchichthys Swainson, Nat. Hist.
 Animals, vol. 2, pp. 180, 263, 1839. (Type
Rhynchichthys pelamides Valenciennes.)

Rhinoberyx Gill, Proc. Acad. Nat. Sci.
 Philadelphia, p. 237, 1862. (Type
Rhynchichthys brachyrhynchus Bleeker,
 monotypic.)

Neomyripristes Castelnau, Proc. Zool.
 Acclimatiz. Soc. Victoria, vol. 2, p. 98, 1873.
 (Type Neomyripristes amoenus Castelnau,
 monotypic.)

Neoniphon Castelnau, Viet. Offic. Rec.
 Philadelphia Exhib. (Res. Fish. Austral.),
 p. 4, 1875. (Type Neoniphon armatus
Castelnau, monotypic.)

9022. ~~Langao Point, Luzon.~~ June 24, 1909. Length 245 mm. (88a)

5964. ~~Little Santa Cruz Island.~~
May 26, 1908. Length 280 mm. Olivaceous above, whitish below. Large dusky blotch on middle of side. Obscure brownish shades on preorbital. Inside mouth scarlet. Fins more or less vermilion.

Flammæo Jordan and Evermann,
Bull. U. S. Nat. Mus., No. 47, pt. 3, p.
2871, 1898. (Type Holocentrum
marianum Cuvier, monotypic.)

Sargocentron Fowler, Proc. Acad. Nat.
Sci. Philadelphia, p. 235, 1904.
(Type Holocentrum leo Cuvier, orthotypic.)

Adioryx Starks, Science, new ser., vol.
28, no. 722, p. 614, October 30, 1908.
(Type Holocentrus suborbitalis Gill,
orthotypic.)

Faremusca Whitley, Rec. Austral. Mus.,
vol. 19, no. 1, p. 68, August 2, 1933.
(Type Holocentrum punctatissimum
Cuvier, orthotypic.)

Kitaflamæo Whitley, Rec. Austral. Mus.,
vol. 19, no. 1, p. 69, August 2, 1933.
(Type Holocentrum tahiticum Kner,
orthotypic.)

Cephalofarer Whitley, Rec. Austral. Mus.,
vol. 19, no. 1, p. 69, August 2, 1933.
(Type Holocentrum sicciferum Cope,
orthotypic.)

obscure transverse bars on fin.
Pectorals very pale hyaline pink.
Ventrals yellowish. Inside mouth red.

12805, 20946. San Miguel Harbor,
Ticao Island. April 21, 1908. Length 137 to 148 mm.

9133, 9134. San Roque, Leyte. July 29,
1909. Length 278 to 298 mm.

19680 to 19683. Santa Cruz Island,
Marinduque. April 24, 1908. Length 68 to 100 mm.

5001, 5002. Simonov Island, Tawi
Tawi Group. February 24, 1908. Length 240 to 290 mm.

21543. Subig Bay. January 7, 1908.
Length 83 mm.

Body oblong, more or less elongate, moderately compressed, back little elevated. Caudal peduncle slender. Head compressed, narrowed forward. Snout greatly projecting in young, obtuse with age. Eye very large. Mouth small, terminal, nearly horizontal, lower jaw often projects with age. Maxillary broad, striate, with supplemental bone, usually not reaching middle of edge. Bands of fine villiform teeth in jaws, on vomer and palatines. Opercle usually with 2 strong subequal spines above, lower edge of bone sharply serrate. Preopercle with strong spine at angle. Orbital ring, preorbital, preopercle, interopercle, subopercle,

occiput and shoulder girdle with sharply serrate edges.

Branchiostegals 8. Scales moderate or large, closely imbricated, hind edges strongly spinous. Lateral line complete, axial along side. Dorsal deeply emarginate, strong spines usually 11, last larger than penultimate, slender and close to soft rays. Soft dorsal with short base, fin high. Anal spines 4, first and second quite small, third very long and strong, fourth smaller. Soft anal with 8 to 11 branched rays. Caudal widely forked, both lobes with basal rudimentary rays spine like. Pectoral with short weak spine. Ventral large, with strong spine and 7 branched rays.

Many species, all tropical, remarkable for the development of spines almost everywhere on surface of body. In life bright red, with silvery spots or longitudinal bands on scale rows. Some are more or less golden and others are with black and white variegated colors. This brilliancy of color, together with their spinous armature, appears to have suggested the name soldier-fishes.

It does not seem necessary to adopt Adionyx of Starks until all the species are examined and studied with respect to their osteological characters.

Starks gives the following:

"Peculiarly Holocentrus suborbitalis Gill, a hitherto closely related species, has no posterior opening from the otolith chamber, the chamber does not form a tube-like prominence at the side of the cranium, the otolith is comparatively small, and the air-bladder does not extend forward to the cranium. These characters seem of sufficient importance to make suborbitalis the type of a distinct genus, for which the name Adionyx is proposed."

6226. Mantaguin Bay, Palawan.

April 2, 1909. Length 123 mm.

6584. Maricaban Island near Sepoc

Point. July 21, 1908. Length 438 mm. Short blue stripe before eye. Dusky lateral blotch.

22019. Marivelles Bay, Luzon.

January 27, 1909. Length 72 mm.

8588, 8592, 8610, 11210, 13877 to 13879.

Matnog Bay, Luzon. May 31, 1909. Length 135 to 285 mm.

9299. Murcielagos Bay, Mindanao.

August 9, 1909. Length 273? mm.

12567. Near Palag Bay, Luzon. June 16, 1909. Length 240 mm.

12747 to 12749, 12751, 12752. North end of Endeavor Strait, Palawan. December 22, 1908. Length 138 to 163 mm.

9216 and 9217. Opol, Mindanao. August 4, 1909. Length 230 to 256 mm.

7950, 7951, 15626. Pagapas Bay, Luzon. February 20, 1909. Length 228 to 282 mm.

749
The following is a doubtful
species, imperfectly described
and without figure.

(1)

The Fishes of the Families Banjosidae,
Lethrinidae, Sparidae, Girellidae,
Kyphosidae, Oplegnathidae,
Gerridae, Mullidae, Emmelichthyidae,
Sciaenidae, ~~and~~ Sillaginidae, Arripidae
and Inoplosidae,
collected by the United States Bureau
of Fisheries Steamer "Albatross",
chiefly in Philippine Seas and
adjacent waters.

By
Henry W. Fowler
of the Academy of Natural Sciences
of
Philadelphia

Holocentrus marianus Valenciennes

Holocentrum marianum Valenciennes,
Hist. Nat. Poiss., vol. 3, p. 219, 1829
(type locality, Martinique).

Holocentrus marianus Jordan and Evermann,
Bull. U. S. Nat. Mus., No. 47, pt. 1, p. 852,
1896 (compiled).

Flammeo marianus Jordan, Evermann,
Clark, Rep. U. S. Comm. Fisher. 1928 (1930),
pt. 2, p. 236 (reference).

Holocentrum rostratum (not Gray) Poey,
Mem. Hist. Nat. Cuba, vol. 2, p. 157, 1860
(Cuba).

The original account by Cuvier
is as follows:

Lower jaw somewhat prominent;
subopercle and opercle well
striate and denticulate. D.
XI, 12, moderately notched;
A. IV, 9, third spine greatly
elongated; caudal rays 17,
rudimentary rays strong;
pectoral rays 14; ventral
I, 7. Silvery golden or red,
without longitudinal streaks.
No black points on scales.
No black blotch on dorsal.
(Cuvier.)

eye edge.

D. XIII, 10, second spine elongated or $1\frac{1}{3}$ in head, first ray $3\frac{1}{5}$; A. III, 8, second spine $3\frac{1}{5}$, first ray $3\frac{1}{8}$; caudal $1\frac{1}{2}$, forked, lobes broad; least depth of caudal peduncle $2\frac{1}{8}$; pectoral 1; ventral $1\frac{1}{3}$.

Silvery, with rosy red sheen. Fins flesh colored, with blue reflections.

Four gray transverse bands. (Klunzinger.)

Red Sea, Arabia. Valenciennes give the length of Geoffroy's examples as 150 mm. The record for Nagasaki by Martens is perhaps questionable.

Steindachner had examples 310 mm.

long and says third to fifth dorsal spines prolonged and filamentous.

Poey's Holocentrum rostratum
is with the following details:

Depth $3\frac{2}{3}$ in total with caudal,
body rather deep; head 3. Snout
long; eye 3 in head; mouth
large; maxillary reaches $\frac{1}{2}$ in
eye; opercular spines 2, short,
subequal.

D. XI, 13; A. IV, 8, third
spine strong, $\frac{3}{4}$ body height;
caudal lobes equal; pectoral
rays 14.

Bright red. No white blotch
on cheek. Soft dorsal with 2
rows of white dots. Other fins
carmine. Length 170 mm.
(From Poey.)

~~Transferred to
the Holocentridae~~

rather low; preopercle border narrow and finely ciliated, edge entire on figure; suborbital depth $1\frac{1}{3}$ in eye.

Scales $4\frac{1}{6}$ in lateral line to caudal base, on figure; 4 above, 13 below, 11 predorsal forward opposite eye center, 5 rows on cheek to preopercle ridge with flange naked; caudal base finely scaled.

D. 8, 9, 1, first spine elongate and reaches caudal base, second spine $1\frac{7}{8}$ in head, eighth ray $1\frac{2}{5}$; A. III, 7, I, third spine $2\frac{7}{8}$, last ray $1\frac{2}{5}$; caudal ends in upper filament about long as lower lobe, which nearly equals head; fin deeply forked; least depth of caudal peduncle $2\frac{4}{5}$; pectoral 1; ventral 1, ends in filament.

Red, fins tinted violet. Figure shows golden olivaceous narrow longitudinal

Immature forms have been
referred to the following:

12732. Apuluan Bay, Pagbilao Island.
February 24, 1909. Length 171 mm.

5627, 7740, 13331. Caxisigan Island,
off Balabac. January 2, 1908. Length
194 to 266 mm.

6398. [D. 5272.] Corregidor Light, 2.
26° E., 25.50 miles (14° N., 120° 42' 30"
E.). July 14, 1908. Length 207 mm.

19834. Endeavor Strait, north west
coast of Palawan. December 22, 1908.
Length 115 mm.

16307. Endeavor Strait. December 23,
1908. Length 125 mm.

7601. Endeavor Strait. December 24, 1908.
Length 260 mm.

19791. Gomomo Island. December 3, 1909.
Length 84 mm.

A408. Jolo market. March 7, 1908.
Length 263 mm.

Holocentrus brachyrhynchus (Bleeker)

Rhynchichthys brachyrhynchus Bleeker,
 Natf. Tijds. Ned. Indië, vol. 4, p. (92) 107,
 1853 (type locality, Amboyna); Act. Soc.
 Ind. Néerl., vol. 2, no. 7, p. 3, 1857 (Amboyna)
 — Guichenot, notes Ile Réunion, vol. 2, p.
 24, 1862.

Rhynchichthys brachyrhynchus Günther, Cat.
 Fish. Brit. Mus., vol. 1, p. 50, 1859
 (compiled).

— Bleeker, Nederl. Tijds. Dierk., vol. 4, p.
 231, 1874 (Amboyna); Rés. Poiss. Madagascar,
 Pollen et Van Dam, pt. 4, p. 86, 1874
 (reference); Atlas Ichth. Ind. Néerl., vol.
 9, pl. (3) 357, 1877.

Rhinoberyx brachyrhynchus Gill, Proc. Acad.
 Nat. Sci. Philadelphia, p. 237, 1862.

8377. Calangaman Island.
March 16, 1909. Length 410 mm.

5234, 11188, 11189. Canmahala Bay,
Ragay Gulf, Luzon. March 11, 1909. Length
75 to 228 mm. 5 examples.

10606, 20271. Catangan Bay, Masbate
Island. April 18, 1908.

16090, 16091. Catangan Bay. May 14,
1909. Length 253 to 260? mm.

5510. Catbalogan, Samar Island.
April 15, 1908. Length 278 mm. Back
borders of scales olive,
pale olive green, center of each scale
with paler spot; general color
whitish below, though scales largely
with gray borders; bronze on middle

Depth $2\frac{2}{5}$; head $2\frac{2}{3}$. Snout 4 in head; eye $2\frac{3}{4}$, greatly exceeds snout; maxillary reaches $\frac{3}{4}$ in eye, length from snout tip 2 in head; interorbital low, apparently level; opercle with 2 subequal moderate spines; preopercle without spine.

Scales 28 in lateral line to caudal base and 2 more on latter; 3 above, 5 below, 3 rows on cheek.

D. X, I, 14, third spine $2\frac{1}{4}$ in head, first ray 2; A. IV, 14, third spine $3\frac{1}{8}$, second ray 2; caudal $1\frac{4}{5}$, emarginate behind; least depth of caudal peduncle $5\frac{1}{3}$; pectoral $1\frac{1}{2}$; ventral $1\frac{3}{5}$.

Red above, whitish below on head, yellowish below on trunk

(Klunzinger.)

Red Sea. Quite like the example
from South Africa, not now available,
and which I identified as Dentex
rupestris Valenciennes may be the
present species.

and tail. Iris yellowish.
Spinous dorsal black, narrowly
white basally. Soft vertical
fin brownish, front of dorsal
and anal and outer part of
each caudal lobe dark brown.
Paired fins reddish. (Bleeker.)

East Indies, Mauritius.

In the collection I find two specimens
not identifiable in the Rhynchichthys
stage:

2 examples. Talsse Island. November 8, 1909.
Length 14 to 15 mm.

entire or crenulate.

Scales ~~50~~ in lateral line; 5 or 6 above, 16 below, predorsal extend forward above nostrils, of which anterior quite small and crowded; 11 rows on cheeks, of which 5 on preopercle flange.

D. XII, 10 or 11, third and fourth spines subequal or $2\frac{1}{5}$ in head, first ray $3\frac{1}{8}$; A. III, 8 or 9, second and third spines subequal, second $2\frac{2}{5}$, first ray equals third spine; caudal $1\frac{1}{10}$, forked, lobes pointed; least depth of caudal peduncle $2\frac{1}{2}$; ventral $1\frac{2}{5}$; pectoral 3 in combined head and body to caudal base.

Rose red, belly silvery. Many scales of upper half of body with blue dots, whereby longitudinal rows form. Faint pale. Length 400 mm.

I am unable to locate ~~that~~ the
following species credited to
Lacépède from Mauritius:

Holocentrum aurolineatum Lacépède

Holocentrum aurolineatum Bleeker,
Rech. Faune Madagascar, Pollen et
Van Dam, pt. 4, p. 86, 1874 (reference).

Oleophryne

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band. Vertical fins and ventral
dusky. Pectoral pale.

Natal coast, Delagoa Bay.

1 example. A.N.S.P. Delagoa Bay.

H.W. Bell Marley. Length 340 mm.

Holocentrus pelamidis (Valenciennes)

Rhynchichthys pelamidis Valenciennes,
Hist. nat. Poiss., vol. 7, p. 504, pl. 208,
1831 (type locality, Indian Ocean).

Rhynchichthys pelamidis Günther, Cat.
Fish. Brit. Mus., vol. 1, p. 50, 1859
(compiled). — Elera, Cat. Fauna Filipinas,
vol. 1, p. 457, 1895 (Luzon; Cavite; Santa
Cruz).

Scales with 5 or 6 basal radiating striae; circuli very minute, mostly absent apically.

D. IX, 10, I, third spine $1\frac{1}{2}$ in head, last spine and first ray subequal or $2\frac{7}{8}$ to $3\frac{1}{5}$ in head, last ray 4; A. III, 7, I, third spine $2\frac{2}{5}$ to $2\frac{1}{2}$, first ray $2\frac{1}{4}$ to $2\frac{3}{5}$; least depth of caudal peduncle $2\frac{7}{8}$ to 3; ventral $1\frac{2}{5}$ to $1\frac{1}{2}$; caudal $2\frac{4}{5}$ to 3 in rest of body; pectoral $2\frac{7}{8}$ to 3.

Largely uniform pale brownish, back and upper surfaces scarcely dark, with silvery reflection. Fins uniform brownish. Iris grayish.

Depth 3; head $2\frac{2}{3}$, width 2.
 Snout $3\frac{1}{5}$ in head; ^{sharp pointed} eye 3,
 slightly greater than snout, equals
 interorbital; maxillary reaches
 $\frac{1}{2}$ in eye, expansion $3\frac{3}{4}$, length
 $1\frac{7}{8}$ in head; interorbital $2\frac{2}{3}$,
 rather low, convex; preopercular
 spine $2\frac{1}{5}$ in eye; opercular spine $\frac{1}{2}$ preopercular.
 Scales 36 in lateral line
 to caudal base and 3? more on
 latter; 3 above, 5 below, 5 rows
 on cheeks below eye.

D. X, I, 12 (XI, 13 in description),
 second spine $1\frac{7}{8}$ in head, soft
 fin height at fourth branched
 ray $2\frac{4}{5}$; A. IV, 12 (IV, 7 in
 description); third spine $2\frac{1}{4}$,
 first branched ray 3; caudal
 $1\frac{2}{3}$, ^{deeply} emarginate behind; least
 depth of caudal peduncle $5\frac{1}{4}$;
 pectoral $2\frac{1}{5}$, rays 14; ventral

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Dentex filiosus Valenciennes

Dentex filiosus Valenciennes, Hist. Nat. Iles
Canaries, Webb and Berthollett, vol. 2, pt. 2,
Poiss., 1836-44, p. 37. Canaries. $\frac{1}{m}$
Günther, Cat. Fishes Brit. Mus., vol. 1,
1858, p. 371 (Cape Verde). ~~as Karoli, Temm.~~
~~Hitzsch, Budapest, vol. 5, 1881, p. 154~~
~~Agobohama (?)~~. $\frac{1}{m}$ Pellegrin, Ann.
Inst. Océanographie Monaco, vol. 6, pt. 4,
1914, p. 50 (Cap Blanco, Côtes mauritaines;
Mossamedès). $\frac{1}{m}$ Gilchrist and Thompson,
Ann. Durban Mus., vol. 1, pt. 4, 1917, p.
356 (references). $\frac{1}{m}$ Chabrand and
Monod, Bull. Etud. Hist. Sci. Afrique
Occident. France, 1926, p. 267 (Port
Étienne). $\frac{1}{m}$ Barnard, Ann. South African
Mus., vol. 21, pt. 2, 1927, p. 715 (Table Bay,
Agulhas Bank, Natal, to 7 fathoms).

rays I, 7, fin $2\frac{1}{3}$ in head.

Mostly greenish on back, whitish on sides, with brilliant silvery reflections. Dorsal gray, edge milk white without spot. Length 126 mm. (Valenciennes)

Indian Ocean. Although Valenciennes says the dorsal is without spot his figure shows a blackish subbasal blotch on each membrane of the spinous fin except the first membrane. All the fins are shown as gray or whitish otherwise.

Formosa. Apparently known only from the type. Jordan and Evermann have, however, confused another fish at the end of their description, evidently a Serranus. Possibly, to judge from the last paragraph, it may even refer to a third fish! Hemipterus matsubarae certainly differs from any species of Dentex known to me in the diminished rows of scales on the cheeks.

Analysis of species

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a. Scales 3 below spinous dorsal origin and lateral line.

b. Scales 33 to 36; front edges of soft dorsal and anal, also upper and lower caudal edges dusky; each row of scales on body with pale median band. ruber.

b.² Scales 37 to 40; spinous dorsal dusky, edge white, narrow white medial streak behind each spine; each row of body scales with pale median band, 1 as oblique dark blotch on caudal peduncle above; fins pale, last membranes of spinous anal blackish. cornutus.

b.³ Scales 48.

c. Spinous dorsal with row of median light rose spots and tip of each spine light pink; soft anal rays 9. elongatus.

c.² Spinous dorsal with black band

Yagasaki). $\frac{1}{m}$ Jordan and Evermann,
Proc. U. S. Nat. Mus., vol. 25, 1902, p. 350
(Formosa). $\frac{1}{m}$ Jordan and Richardson,
Mem. Carnegie Mus., vol. 4, no. 4, 1909,
p. 189 (Yakuo). $\frac{1}{m}$ Franz, Abhandl. Kon.
Bayer. Akad. Wiss., Math.-physik. Klasse,
vol. 4, suppl. band 1, 1910, p. 47 (Kusushi).
 $\frac{1}{m}$ Izuka and Matsuura, Cat. Zool. Spec. Tokyo Mus., Vertebr., 1920, p. 148 (Tokyo market).
 $\frac{1}{m}$ Fowler, Journ. Bombay Nat. Hist. Soc.,
vol. 33, no. 1, 1928, p. 114 (Bombay).
Pagrus (Chrysophrys) major Steindachner
and Döderlein, Denkschr. Akad. Wiss.
Wien, Math.-Naturw. Klasse, vol. 48, pt.
1, 1884, p. 19 (Tokio).
Sparus major Bleeker, Verhandl. Kon.
Akad. Wet. Amsterdam, vol. 18, 1879,
p. 8 (Japan).
Pagrosomus major Jordan and Thompson,
Proc. U. S. Nat. Mus., vol. 41, 1912, p. 576
(Wakanoura, Omori, Tokyo, Yagasaki).
 $\frac{1}{m}$ Jordan and Hetz, Mem. Carnegie Mus.,

medially on first 2 membranes,⁷⁶²
^{narrowly} white above and below; each
scale row on body with white
medial longitudinal band;
soft anal rays 11. ittodai.

a.² Scales 4 below spinous dorsal
origin and lateral line.

d. Body not uniform red.

e. No white saddle like spot
on caudal peduncle behind
soft dorsal.

f. Spinous dorsal largely black.

g. Spinous dorsal with white
lines or bands.

h.¹ Scales 38 to 40. opercularis.

h.² Scales 49 to 54. diadema.

g.² Spinous dorsal uniform dusky
or black. melanonotopterus.

f.² Spinous dorsal with at least dark
medial blotch anteriorly.

i. Spinous dorsal with deep
brown blotch on each

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Pagrosomus major (Schlegel)Chrysophrys major Schlegel, Faunajaponica, Poiss., pts. 2-4, 1843, p. 71, pl. 35. All bays of Japan.Pagrus major Günther, Cat. Fishes Brit.

Mus., vol. 1, 1859, p. 478 (China; Japan).

Martens, Preuss. Exped. Ost Asien, 1876,p. 387 (Yokohama). Günther, Rep. Voy.

Challenger, vol. 1, 1880, p. 64 (Inoshima).

Hystrom, Kon. Svensk. Vet. Akad.

Handlign., vol. 13, 1887, no. 4, p.

(Nagasaki). Elera, Cat. Fauna Filipinas, vol. 1, 1895, p. 483 (Luzon, Manila, Malabon).Ishikawa and Matsuura, Prelim. Cat. Fishes Mus. Tokyo, 1897, p. 53.Kishinouye, Fishes Bur. Tokyo, vol. 10, no. 3, 1901, p. 32, pls. 4, 6, 7, fig. 1 (South Hokkaido to Formosa, Korea, China).Jordan and Snyder, Annot. Zool. Japon., vol. 3, pts. 2-3, 1903, p. 79 (Yokohama and

membrane medially (in young first and second blotches black); each body scale row with whitish medial longitudinal band.

i. Spinous dorsal with dark blotch only on first 3 or 4 membranes, rarely another posteriorly. vexillarius.

f. Obscure pale lateral stripe on body.

k. Anal rays 9. armatus.

k. Anal rays 7. hasta.

f. Each row of body scales with white medial longitudinal band made up of pale spot on each scale; fins pale.

l. Black blotch on first 2 dorsal membranes and large dark blotch medially on fin. coruscus.

l. Black blotch on first 3 spinous dorsal membranes medially. productus.

Opercle not armed. Gill rakers short.
 Branchiostegals 6. ^{air bladder simple.} Intestine short.
 Pyloric coeca few. Preopercle with or
 without few scales. Dorsal spines 12,
 depressible in groove, without antorse
 anterior spine. Anal spines moderate,
 second not greatly developed. Caudal
 forked.

Carnivorous fishes of the shores of
 Asia and Australia, close to the
 Atlantic Pagrus which differs chiefly
 in its deeper body. Although Jordan
 and Thompson have attempted to
 separate the two accepted species
 of this genus on their so called
 structural characters, such as;
 the width of the preorbital $4\frac{3}{4}$
 in head - and 8 rows of scales above
 the lateral line for P. major; width

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3. Pale longitudinal line following
along each row of scale
junctures; first membrane
spinous dorsal with dusky
median blotch. furcatus.

4. Each scale row with dark
brown longitudinal band,
often as dark blotch on each
scale; large dark to black
median blotch on first 3
membranes of spinous dorsal,
then median portion of each
pale, margin and fin base
white; front edges of dorsal,
anal and outer caudal lobes
blackish. sammara.

2. Spinous dorsal with submarginal
black band, at least anteriorly;
longitudinal white band along
each row of body scales; first
pale or whitish. microstomus.

3. Spinous dorsal with each
membrane anteriorly with large
darker brown area; each

Genus Pyrosomus Gill Cm 30

Pyrosomus Gill, Mem. National Acad. Sci., vol. 6, 1893, p. 97. Type Labrus auratus Schneider.

Sparosomus Gill, Mem. Nat. Acad. Sci. ~~op. cit.~~, vol. 6, 1893, pp. 116, 123. Type Chrysophrys unicolor Quoy and Gaimard, Lapsus for Pyrosomus. Not Sparisoma Swainson 1839 or Sparosoma Vuugage 1883.

Body oblong, rather deep, compressed. Head large. Mouth rather small, terminal, low. Front teeth in jaws cardiform, outer series usually little enlarged, canine like, not compressed; teeth behind canines slender and acute; both jaws with 4 or 3 rows of rounded molars, sometimes variably mixed with slender teeth; no teeth on palate. Hind nostril oblong, much larger than front nostril, not slit like. Preopercle entire.

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scale with pale spot, dark
borders forming reticulate
pattern.

suborbitalis.

i.⁴ Spinous dorsal with small
inconspicuous dark basal spot,
only on first membrane; fins
reddish.

k.¹ Red; body with pale or
whitish longitudinal bands.

binotatus.

k.² Olive; young with streaks.
unipunctatus.

i.⁵ Spinous dorsal without any
black markings.

m.¹ Each row of body scales
with pale or white
medial longitudinal band.

n.¹ Each spinous dorsal
membrane with white
edge.

o.¹ Pale or whitish median
spot on each membrane of
spinous dorsal. euphrates.

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A1471. Kait Point, Libani Bay,
Celebes. December 29, 1909. Length 240
mm.

8358, 8357. Apra Bay, Guam.
November 19 to 21, 1907. Length 123 to 138 mm.

51081 U.S.N.M. Hawaii. Bureau
of Fisheries (05174). Length 239 mm.

52473 U.S.N.M. ^{Samoa} Apia, Bureau
of Fisheries. Length 153 to 173 mm.
2 examples.

52662 U.S.N.M. Hawaii. Bureau of
Fisheries (05173). Length 240 mm.

55089 U.S.N.M. Honolulu. Albatross
Collection (2772). Length 225 mm.

65955 U.S.N.M. Wotho Atoll, Marshall
Island. Albatross Collection (A181).
Length 248 mm.

27984 A.N.S.P. Hawaiian Islands.
Bureau of Fisheries V Length 168 mm.
(05172).

766
o.² Pale or whitish median
spot, also whitish basal
spot, on each membrane
of spinous dorsal. tierre.

o.³ Pale or whitish median
spot on each membrane
of spinous dorsal, besides
obscure to dusky spot
often close below.

lactoguttatus.

m.² Spinous dorsal without
white edge.

p.¹ Spinous dorsal red,
paler basally; scales 44.

spinosissimus.

p.² Spinous dorsal and
all fins yellow; scales
49 to 52. xantherythrus.

m.² Red, with longitudinal
rosy or deeper red streaks
along rows of scales.

g.¹ Scales 55; dorsal rays
15. macropterus.

g.² Scales 40; dorsal rays
13. brachypterus.

5593. Van Miguel Harbor, Ticao Island. April 21, 1908. Length 225 mm.

9782. Viasi market. February 17, 1908. Length 153 mm.

5130. Swigao, Mindanao. May 8, 1908. Length 166 mm.

7357. Taro Island. December 15, 1908. Length 218 mm.

6453. Tilig, Lulung Island. July 14, 1908. Length 230 mm.

6461, 6484, 10843. Tilig. July 15, 1908. Length 183 to 410 mm.

13163. Tumindao Island. February 26, 1908. Length 126 mm.

9155. Varadero Bay, Mindoro. July 23, 1908. Length 185 mm.

A884. Limbe Strait, north of Celebes, Dutch East Indies. November 10, 1909. Length 283 mm. A silvery gray spot with scarlet under border of upper iris.

e.² White saddle like spot on
caudal peduncle behind soft
dorsal.

r.¹ Red; fins yellowish.
caudimaculatus.

r.² Purplish red;
membranes spinous
dorsal dusky basally,
fins otherwise rosy.
violaceus.

d.² Body uniform red. sancti-pauli.

a.³ Scales 5 below spinous dorsal
origin and lateral line.

s.¹ Scales 44 to 49;
preopercle spine
very long, equals eye;
largely uniform
reddish. spinifer.

s.² Scales 52 to 59;
preopercle spine
moderate or shorter
than eye.

8004, 10770 to 10772, 14724, 15924.

Port Panalacan, Marinduque. February 23, 1907. Length 190 to 267 mm.

6946. Port Galera, Mindoro. June 9, 1908. Length 212 mm.

6332, 9025, 18873. Port Juncelo, Luzon. July 13, 1908. Length 151 to 258 mm.

18960, 18961. Port Maricaban. July 21, 1908. Length 181 to 212 mm.

6737. Port Matalvi, Luzon. November 2, 1908. Length 205 mm.

7005. Port San Pio Quinto. November 10, 1908. Length 393 mm.

7083. Port San Pio Quinto. November 11, 1908. Length 310 mm. Silvery below, overshadowed with olivaceous above. Fins dusky, except pectoral, which rather orange with dusky axillary blotch.

7324, 12840, 16883. Sablayan, Mindoro. December 12, 1908. Length 177 to 250 mm.

t.¹ Opercular spine
short. ascensionis.

t.² Opercular spine
above nearly long as
preopercular spine.
hastatus.

of all scales dusky; body of each scale on lower sides of body silvery, becoming soiled white below. Scattered smoky purple spots under overshade on preorbital. Lips yellowish, chin and lower surface of head pearl gray. Interorbital region slaty. Dorsal brownish, incised tips and little more of spinous membranes dusky scarlet; round black spot at base of second soft membrane, also third much smaller on third; spines and rays all with slight reddish shade. Anal like dorsal, scarlet spinous membranes not so marked; round black spot at base of first, second and third soft membranes. Pectoral hyaline red, membranes colorless; blackish in axil. Ventrals reddish.

21843. Pandamon Island. March 23, 1909.
Length 165 mm.

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Holocentrus ruber (Forskål)

Sciaena rubra Forskål, Descript.
Animal., pp. XI, 48, 1775 (type
locality, Arabia). — Bonnaterre,
Tabl. Ichth., p. 120, 1788 (Red Sea).
— Gmelin, Syst. Nat. Linn., vol. 1,
p. 1301, 1789 (copied). — Walbaum,
Artedi Pisc., vol. 3, p. 315, 1792
(copied).

Holocentrus pelamides (Valenciennes)

Rhynchichthys pelamides Valenciennes,
Hist. nat. Poiss., vol. 7, p. 504, ~~pl. 208~~,
1831 (type locality, Indian Ocean). —

Elera, Cat. Fauna Filipinas, vol. 1, p.
457, 1895 (Luzon, Cavite, Santa Cruz). —

Günther, Cat. Fish. Brit. Mus., vol. 1,
p. 50, 1859 (compiled). —

Rhynchichtys pelamides Valenciennes,
Hist. nat. Poiss., ~~Atlas~~ Atlas vol. 2,
pl. 202, 1831.

~~Holocentrus ruber (Forsk.)~~

~~Sciaena rubra Forsk., Descript. Animal.,
pp. XI, 48, 1775 (type locality, Arabia).~~

Perca rubra Schneider, Syst. Ichth.
Bloch, 1801, p. 90 (copied).

Holocentrus ruber Rüppell, Atlas Reise
nördl. Afrika, Fische, p. 83, pl. 22, fig. 1,
1828 (Red Sea); Neue Wirbelth., Fische,
p. 96, 1839 (note).

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264, 1863 (Sitapure, Timor); Versl.
Akad. Wet. Amsterdam, vol. 16, p. 367,
1864 (Aru Islands, Moluccas).

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1905 (Hong Kong); Bull. Bur. Fisher.,
vol. 26, p. 112, 1906 (1907) (Panay). —
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Seale, Philippine Journ. Sci., vol. 9, p. 62,
 1914 (Hong Kong). — Cockerell, Mem. Queensland
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 vol. 1, nos. 3-4, p. 447, November 5, 1917
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 (reference). — Fowler, Proc. Acad. Nat.
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 Kusaie Islands), vol. 11, no. 5, p. 321, 1931
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 Univ., no. 1, p. 96, January 1931 (reference).

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 pt. 1, p. 133, June 29, 1929, p. 133 (reference).
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Holocentrum rubrum Günther, Cat. Fish.
Brit. Mus., vol. 1, p. 35, 1859 (Amboina,
Japan, Louisiades, Philippines, China,
India, Red Sea). — ^{Bleeker, Ned. Tijds. Dierk., vol. 1, p. 73, 1863 (Bangka).} Day, Fishes of
Malabar, p. 1, 1865 (compiled). — Kner,
Reise Novara, Fische, p. 7, 1865 (Java,
Manila). — Playfair, Fishes of Zanzibar,
p. 52, 1866; ^{Proc. Zool. Soc. London, 1867, p. 855 (Seychelles).} — Kner, Vitzl. Ber. Abad.
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722, 1870 (Red Sea). — Schmeltz, Cat.

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224, 1874 (Java, Bluzend Islands,
Bawean, Bali, Sumatra, Batu, bias,
Singapore, Bintang, Banka, Celebes,
Sangi, Solor, Timor, Helmaheira,
Batjan, Buru, Ceram, Amboina, Aru,
Philippines); Rés. Poiss, Madagascar,
Pollen et Van Dam, pt. 4, p. 86, 1874
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vol. 25, p. 426, 1900 (Ternate); Denks.
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Flores, Sava, Rotte, Kivandang Bay, Sulu,
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Poiss., vol. 4, pp. 333, 372, 1802 (type
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1902 (Okinawa).

Holocentrum albo-rubrum Richardson,
Ichth. China Japan, p. 223, 1845 (Seas of
China and Japan).

Holocentrum alborubrum Bleeker, Verh.
Batav. Genoot. (hal. Ich. Japan), vol. 25,
p. 10, 1853 (reference); Act. Soc. Sci. Ind.
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(Doreh, New Guinea) ^{vol. 8, (Sumatra), p. 4, 1859 (Genculen);} Nat. Tijds. Ned.
Indië, vol. 21, p. 136, 1860 (Muntok,
Banka); vol. 22, p. 99, 1860 (New Guinea),
p. 111 (Buru), p. 244 (Batoesendi,
Bawean). ^{(1904 (Padang) Sumatra)}

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Nat. Sci. Philadelphia, p. 235, 1904 (Padang
material).

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Perca praslin Lacépède, Hist. Nat. Poiss.,
vol. 4, pp. 397, 415, 1802 (type locality,
New Britain).

Holocentrus praslin Seale, Occas. Pap.
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vol. 25, p. 225, fig. 26, 1905 (1906) (Apia;
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Poiss., vol. 3, p. 197, 1829 (type locality,
Red Sea; East Indies; Pondicherry;
New Britain; Port Praslin). — Bleeker,
Verh. Batav. Genoot. (Percoid.), vol. 22,
p. 53, 1849 (Batavia); (hal. Ich. Bengal.),
vol. 25, p. 34, 1853 (reference); Nat. Tijds.
ned. Indië, vol. 3, p. 52, 1852 (Singapore),
p. 740 (Macassar), p. 741 (Boeloe-kumba);
vol. 5, p. 68, 1853 (Solor), p. 154 (Macassar);

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vol. 6, p. 50, 1854 (Sindangole, Halmahera),
p. 517 (Telakan, West Sumatra); vol. 7,
p. 227, 1854 (Macassar), p. 360 (Batjan);
vol. 8, p. 344, 1855 (Quizend Islands), p.
345 (Tiboe, Sumatra), p. 436 (Manado,
Celebes); vol. 9, p. 259, 1855 (Sibogha);
vol. 10, p. 346, 1856 (Rio, Bintang); vol.
11, p. 385, 1856 (Kajeli, Buru); vol. 12,
p. 213, 1856 (Nias), p. 230 (Batu), p.
273 (Tobali, Banka); vol. 13, p. 56,
1857 (Kajeli, Buru), p. 371 (Sangi), p.
478 (Karangbollong, Java), p. 479 (Prigi);
vol. 14, p. 245, 1857 (Prigi); vol. 15, p.
220, 1858 (Biliton); vol. 16, p. 406, 1858
(Japarai, Java); vol. 18, p. 352, 1859
(Bawean); vol. 19, p. 329, 1859 (Pajitan,
Java), p. 333 (Karangbollong); vol. 20,
p. 140, 1859-60 (Badjoa, Boni), p. 202
(Karangbollong), p. 205 (Boleling, Bali);
Act. Soc. Sci. Ind. Néerl., vol. VI, no. 3,
p. 7, 1856 (Macassar); vol. I, no. 5, p. 4, 1856
(Amboina); vol. 2, no. 7, p. 3, 1857 (Amboina);
vol. 3, no. 4, p. 2, 1857-58 (Manado and
Tanawanko); vol. 3, no. 9, p. 2, 1857-58
(Padang), p. 3 (Trusan), p. 5 (Priaman;
Sibogha); vol. 5, no. 8, p. 1, 1858-59 (Tobariri, Celebes).

~~Holocentrus laticeps Cuvier~~

Holocentrus laticeps Cuvier, Hist. nat. Poiss., vol. 3, p. 211, 1829 (no type locality).
~~Valenciennes, Hist. nat. Poiss., vol. 7, p. 500, 1831 (Batavia; Vancolo). —~~
Günther, Cat. Fish. Brit. Mus., vol. 1, p. 38, 1859 (~~no~~ no locality).

Holocentrus laticeps Fowler, Mem. Bishop Mus., vol. 10, p. 102, 1928 (copied);
 vol. 11, no. 5, p. 322, 1931 (reference).
Holocentrus (Holocentrus) laticeps
Whitley, Journ. Pan. Pacific Inst., vol. 3, no. 1, p. 12, January-March 1928 (Santa Cruz Islands).

Holocentrum à tête large Valenciennes, Hist. nat. Poiss., vol. 7, p. 500, 1831 (Batavia; Vancolo).
~~Holocentrum rubrum (not Forsk.)~~
~~Bleeker, Ned. Tijds. Dierk., vol. 4, p. 224, 1874 (part).~~

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Holocentrum atrocissimus (Commerson)
Cuvier, Hist. Nat. Poiss., vol. 3, p. 211,
1829 (name in text).

Holocentrum marginatum Cuvier, Hist.
Nat. Poiss., vol. 3, pp. 216, ^{497,} 1829 (type
locality, Indian Seas).

Holocentrum spinosissimum (not Schlegel)
Richardson, Ichth. China Japan, p. 223,
1846 (Canton, China coast).

Holocentrus aureoruber Fowler, Journ.
Acad. Nat. Sci. Philadelphia, Ser. 2, vol.
12, p. 504, pl. 10, upper figure, 1904
(type locality, Padang, Sumatra).

Depth $2\frac{2}{3}$ to 3; head $2\frac{2}{5}$ to $3\frac{1}{8}$, width $1\frac{7}{8}$ to $2\frac{1}{8}$. Snout 4 to $4\frac{2}{3}$ in head; eye $2\frac{1}{3}$ to $3\frac{1}{3}$, greater than snout or interorbital; maxillary reaches $\frac{2}{5}$ to $\frac{1}{2}$ in eye, expansion $2\frac{1}{4}$ to $2\frac{1}{2}$ in eye, length $2\frac{1}{3}$ to 3 in head; interorbital $3\frac{2}{5}$ to $4\frac{1}{8}$, very low, concave.

Gill rakers 6 or 7 + 10 to 15, short, $1\frac{1}{2}$ in gill filaments or $1\frac{1}{2}$ in eye.

Scales 33 to 36 in lateral line to caudal base and 3 or 4 more on latter; 3 or 4 above, 7 or 8 below, 7 predorsal, 5 rows on cheek. Scales with 4 or 5 close set subequal basal points; apical denticles 18 to 20 in single row, medial largest; circuli very fine, basal, none apical.

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compact contour and comparatively low soft dorsal and anal fins, (as this species). The greatest differences are, however, found in the color variations. All have until half grown at least traces of a large dark brown spot below the lateral line several scales behind the band and above the pectoral fin. In addition there are traces of 7 or 8 narrow dark vertical bands, variously broken, to form wide set clusters of small dark spots. Often the dark bands are especially incomplete along the axial line of the body. A point in agreement with every specimen is the possession of a pearly or white spot on each scale, often obsolete, but still in some measure evident. Many young examples also show these paler spots as more or

D. XI, 12, I or XI, 13, I, third spine $1\frac{5}{6}$ to 2 in head, third ray $1\frac{4}{5}$ to $1\frac{7}{8}$; A. IV, 8, I to IV, 10, I, third spine $1\frac{1}{2}$ to $1\frac{3}{4}$, second ray $1\frac{2}{3}$ to $1\frac{5}{6}$; caudal $1\frac{1}{2}$ to $1\frac{3}{5}$, forked; least depth of caudal peduncle $3\frac{3}{4}$ to $4\frac{4}{5}$; pectoral $1\frac{2}{5}$ to $1\frac{3}{4}$; ventral $1\frac{2}{5}$ to $1\frac{3}{5}$, spine 2 to $2\frac{1}{8}$.

In life bright red, with silvery white reflections. In preserved examples each row of scales with pale or median longitudinal band, converging on caudal peduncle. Sometimes dark to black blotch at base of soft dorsal and anal posteriorly, also on caudal. Spinous dorsal membrane blackish terminally, also membranes between third and fourth anal spines and first anal

East Indies, Philippines, Indo China, China, Formosa, North Australia, Queensland, Micronesia). My specimens similar to Bleeker's figure, except at present they show no trace of the three oblique bluish bars on the preorbital or the red bar across the pectoral base.

This species known chiefly by its finely spotted or dotted appearance, even in alcoholic specimens, usually a persistent pale pearly spot or dot to each scale. The dark bands or bars on the dorsals and caudal seldom persistent. Hind opercle edge dark, also bar across pectoral base.

Very variable with age. I have been led to consider all the small examples with relatively deep bodies, with

ray. Dark streaks along first
ventral ray and each lobe of
caudal.

Red Sea, Zanzibar, Natal,
Mauritius, Madagascar, Seychelles,
India, Ceylon, East Indies,
Malaya, Philippines, Western
Australia, North Australia, ^{China, Riu Kiu,} Japan,
Melanesia, Micronesia, Polynesia.

grayish or yellowish spot, evidently quite sky blue when fresh. Iris yellowish and brown. Preopercle, opercle and rim around orbit with blue gray tints. Front border of opercle behind vertical preopercle edge and hind border of opercle along flap brown. Also traces of gray or bluish spots and blotch over postocular region and opercles above, also some extend down below eye on cheek. Fins all pale uniform brownish, with very indistinct darker spots or cloudings on dorsal and caudal, mostly on membranes of fin. Paired fins uniform brownish.

Red Sea, Arabia, Zanzibar, Mozambique, Portuguese East Africa, Zululand, Natal, Madagascar, Mauritius, Rodriguez, Seychelles, India, Singapore,

One example. Camino Island near
Laet. June 15, 1909. Length 29 mm.

9829 [1520]. Cuyo Island.
April 9, 1909. Length 177 mm.

One example. Great Tobea Bay,
Great Tobea Island. December
15, 1909. Length 168 mm. [2150.]

22458. Sablayan, Mindoro.
December 13, 1908. Length 73 mm.

Archamia burnensis (Bleeker)

Apogon burnensis Bleeker, Nat. Tijds.
ned. Indië, vol. 11, 1856, p. 394. Kajili,
Bauro. — Günther, Cat. Fishes Brit. Mus.,
vol. 1, 1859, p. 245 (copied).

Amia burnensis Bleeker, Atlas Ichth.
Ind. Néerl., vol. 7, 1873-76, p. 102 (type);
vol. 8, 1876-77, pl. (75) 353, fig. 2.

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U. S. N. M., No. 30568. New Guinea.
Australian Museum. Length 172 mm.

U. S. N. M., No. 30620. New Guinea.
Australian Museum. Length 170 mm.

U. S. N. M., No. 49302. Red Sea.
M. Bellotti. Length 148 to 153? mm.
Two examples.

U. S. N. M., No. 32749. Indian
Archipelago. Royal Museum of Leyden.
Length 176 mm.

U. S. N. M., No. 52398. Samoa, Bureau
of Fisheries (02511). Length 82 to 218
mm. Young quite contrasted with
longitudinal dark and whitish bands.
As Holocentrus praslini. Three
examples.

U. S. N. M., No. 56435. Hong Kong.
P. L. Jory. Length 200 mm.

about $\frac{3}{5}$ of gill filaments.

Scales 45 or 46 in lateral line to caudal base and 2 more on latter; 6 or 7 above, 14 to 16 below, 9 to 10 predorsal; caudal and pectoral bases with small scales. Scales with 16 to 18 basal radiating striae, with 1 to 5 auxiliaries; 110 to 145 apical denticles, with 4 to 8 transverse series of basal elements; circuli very fine.

D. X, 9, I, fourth spine 3 to $3\frac{1}{10}$ in head, fourth ray $2\frac{2}{5}$ to $3\frac{1}{3}$; A. III, 8, I, third spine $3\frac{1}{4}$ to $3\frac{4}{5}$, first ray $2\frac{3}{4}$ to $3\frac{1}{2}$; caudal $1\frac{1}{5}$ to $1\frac{1}{3}$, well emarginate; least depth of caudal peduncle $2\frac{3}{4}$ to $3\frac{1}{10}$; pectoral $1\frac{1}{10}$ to $1\frac{1}{5}$; ventral $1\frac{2}{5}$ to $1\frac{3}{5}$.

Generally brown, little paler below. Each scale on body with pale whitish,

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U. S. N. M., no. 57779. Japan.
P. L. Jouy. Length 181 mm.

U. S. N. M., no. 72251. Calayan.
R. C. McGregor. Length 38 mm.
As Holocentrus praslini.

U. S. N. M., no. 84239. Philippines.
Dr. F. Baker. Length 230? to 258 mm.
Two examples.

U. S. N. M., no. 87973. Poeloe
Tobius Island, Indian Ocean.
Lieut. H. C. Kellers. November 1925.
Length 173 mm.

U. S. N. M., no. 27472. Padang,
Sumatra. A. C. Harrison and H. L.
Hiller. Length 228 mm. Type of
Holocentrus mucronatus.

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Depth $2\frac{3}{5}$ to $2\frac{3}{4}$; head $2\frac{4}{5}$ to 3,
width $2\frac{1}{4}$ to $3\frac{1}{5}$. Snout $1\frac{7}{8}$ to $2\frac{1}{5}$ in
head; eye $3\frac{1}{2}$ to $4\frac{3}{4}$, $1\frac{2}{5}$ to $2\frac{2}{3}$ in
snout, greater than interorbital to 1
to $1\frac{1}{4}$ with age; maxillary extends
little beyond front nostril though
not quite opposite hind one, little
short of front one with age, $2\frac{3}{5}$ to
3 in head; lips moderate, coriaceous;
broad band anteriorly of villiform
teeth in each jaw, with outer enlarged
row of conic teeth of which 4 front
ones above and below canines, and
last 4 each side broadly rounded
molars; interorbital $3\frac{7}{8}$ to $4\frac{1}{5}$,
broadly convex; naked region of head
all finely rugose striate, vertical and
divergent little forward on cheek. Gill
rakers 5 or 6 + 5, short broad tubercles,

Holocentrus cornutus Bleeker

Holocentrum cornutum Bleeker, Nat.

Tyds. Ned. Indië, vol. 5, p. (234) 240, 1853
(Type locality, Ceram), pp. 319, 320
(Amboina); vol. 6, p. 313, 1854 (Larantuka,
Flores); vol. 16, p. 209, 1858 (Batjan). —
Günther, Cat. Fish. Brit. Mus., vol. 1,
p. 45, 1859 (copied).

— Bleeker, Nat. Tyds. Ned. Indië, vol.
22, p. 111, 1860 (Buru); vol. 4, p. 222, 1874
(Celebes, Flores, Batjan, Buru, Amboina,
Ceram); Atlas Ichth. Ind. Néerl., vol.
9, pl. (5) 359, fig. 5, 1877. — Weber,
Siboga Exped., vol. 57, Fische, p. 182,
1913 (Banda). — Weber and
Beaufort, Fishes Indo Austral. Archip.,
vol. 5, p. 243, 1929 (Banda).

— Elera, Cat. Fauna Filipinas, vol. 1, p. 45,
1895 (Zamar, Boringan).

Holocentrus cornutus Evermann and Seale,
Bull. Bur. Fisher., vol. 26, p. 60, 1906
(1907) (Bacon; Bulan). — Seale and
Bean, Proc. U. S. Nat. Mus., vol. 33, p.
241, 1907 (Zamboanga). — Fowler,
Copeia, no. 58, p. 63, June 18, 1918
(Philippines); Proc. Acad. Nat. Sci.
Philadelphia, vol. 79, p. 266, 1927

(Philippines).
(Dzuka and Matsuura, Cat. Zool. Spec. Tokyo Mus., vert., p.
162, 1920 (Agasawarajima). — Fowler,

Holocentrum melanospilus Bleeker, Act.
Soc. Sci. Ind. Néerl., vol. 3, no. 7, pp. 1, 2,
1857-58 (type locality, Amboina).

Holocentrum melanospilus Bleeker, Nederl.
Tijds. Dierk., vol. 4, p. 226, 1874
(Amboina); Atlas Ichth. Ind. Néerl.,
vol. 9, pl. (5) 359, fig. 1, 1877.

Holocentrus brachyrhynchus (Bleeker)

Rhynchichthys brachyrhynchus Bleeker,
Natt. Tijds. Ned. Indië, vol. 4, p. (92) 107,
1853 (type locality, Amboyna); — Günther,
Cat. Fish. Brit. Mus., vol. 1, p. 50, 1859
(Act. Soc. Ind. Néerl., vol. 2, no. 7, p. 3, 1857 (Amboyna)).

— Bleeker, Nederl. Tijds. Dierk., vol. 4,
p. 231, 1874 (Amboyna); Res. Madagascar
Pollen et Van Dam, pt. 4, p. 86, 1874
(reference).

Rhynchichthys brachyrhynchus Guichenot,
Notes Ile Réunion, vol. 2, p. 24, 1862.

Rhinoberyx brachyrhynchus Gill, Proc.
Acad. Nat. Sci. Philadelphia, p. 237,
1862 (

788

Depth $2\frac{3}{4}$ to $2\frac{4}{5}$; head $2\frac{3}{5}$ to $2\frac{7}{8}$, width $1\frac{7}{8}$ to 2. Snout $4\frac{1}{3}$ to $4\frac{2}{5}$ in head; eye $2\frac{2}{5}$ to $2\frac{2}{3}$, greatly exceeds snout or interorbital; maxillary reaches $\frac{1}{3}$ to $\frac{2}{5}$ in eye, expansion $2\frac{3}{4}$ to $3\frac{1}{4}$ in eye, length $2\frac{1}{2}$ to $2\frac{4}{5}$ in head; interorbital $4\frac{1}{8}$ to 5, level to slightly concave; opercle with larger spine moderate, variable, second one much smaller; preopercle spine on upper edge $1\frac{1}{3}$ to 2 in eye. Gill rakers 7+10, of which 2 or 3 rudiments above or below, $1\frac{1}{2}$ in gill filaments, which $2\frac{1}{3}$ in eye.

Scales 33 to 35 in lateral line to caudal base and 4 or 5 more on latter; 3 above, 7 below, 5 or 6 predorsal, 4 rows on cheeks. Scales with 1 to 3 small basal points;

Bleeker, Act. Soc. Ind. Néerl., vol. 1, no. 3, 1856, p. 4 (Manado); vol. 1, no. 5, 1856, p. 75 (Amboina); vol. 2, no. 7, 1857, p. 5 (Amboina); vol. 3, no. 4, 1857-58, p. 3 (Manado); vol. 3, no. 9, 1857-58, p. 4 (Trusan); vol. 5, no. 8, 1858-59, p. 2 (Tobariri, Celebes). — Günther, Cat. Fish. Brit. Mus., vol. 3, 1861, p. 333 (Malay Archipelago, Amboina, Philippines). — Bleeker, Verslag. Akad. Wet. Amsterdam, deel 15, 1863, p. 266 (Ternate). — Kner, Reise. Novara, Fische, 1865, p. 210 (Tahiti). — Günther, Journ. Mus. Godeffroy, band 4, 1875, p. 111, plate 70 (Zanzibar, Samoa, Tahiti). — Day, Fishes of India, pt. 2, 1876, p. 203 (Andamans). — Meyer, Ann. Soc. Espan. Hist. Nat. Madrid, vol. 14, 1885, p. 24 (North Celebes). — Day, Fauna British India, vol. 2, 1889, p. 138 (Andamans). — Elera, Cat. Fauna Filip., vol. 1, 1895, p. 532 (Luzon, Cavite, Santa Cruz). —

apical denticles 7 to 12, parallel
and very fine parallel vertical
striae basally.

D. XI, I, 11, I or XI, I, 12, I, third
spine $1\frac{1}{8}$ to 2 in head, second ray
 $1\frac{3}{4}$ to $1\frac{4}{5}$; A. IV, 8, I or IV, 9, I,
third spine $1\frac{1}{4}$ to $1\frac{1}{3}$, first ray $1\frac{1}{3}$;
caudal $1\frac{1}{3}$ to $1\frac{2}{5}$, forked; least
depth of caudal peduncle 4 to $5\frac{1}{8}$;
pectoral $1\frac{2}{5}$ to $1\frac{2}{3}$; ventral $1\frac{1}{4}$ to $1\frac{2}{5}$.

Brown, little paler below. In each
row of body scales pale longitudinal
band $\frac{1}{3}$ depth of scale exposure,
dark intervening bands on back
more contrasted. On caudal peduncle
bands all slope down laterally,
contracting to base of lower caudal

865

4589, 4590, 4592, 4593. Grande Island
reef, Subig Bay. January 8, 1908. Length
137 to 195 mm.

9015 to 9021. Langa Point, Luzon.
June 24, 1909. Length 225 to 230 mm.

4676. Limbanes Cove. January 14, 1908.
Length 195 mm.

5139, 5140, 6657, 6846, 18531 to 18533,
21039, 21040, 22231, 22232. Little Santa
Cruz Island. May 26 - 28, 1908. Length
112 to 219 mm.

19151 [1341]. Lode Bay, Destacado Island.
March 13, 1909. Length 195 mm.

8816. Maaulabo Island. June 13, 1909.
Length 263 mm.

8828 [940]. Malcochin River, Pagapas
Bay, Luzon. February 20, 1909. Length 226 mm.

790
lobe, leaving large blackish blotch
at upper half of caudal base.
Also dark diffuse blotch on tail
at base of soft anal. Iris slate
or gray. Spinous dorsal membranes
dusky or brownish black, tip of
each whitish and whitish blotch
narrowly along each spine posteriorly.
Spinous anal membranes dusky
black, fins otherwise pale with
ventral and anal rays whitish.

East Indies, Philippines.

11793. Camahala Bay, Ragay Gulf.⁸⁶⁴
March 11, 1909. Length 195 mm.

12255 and 12570. Caxisigan Island.
January 2, 1909. Length 158 to 219 mm.

7672 and 5711 Cebu market. April
4, 1908. Length 165 to 200 mm.

15845. Dupon Port, Leyte Island.
March 17, 1909. Length 180 mm.

221. Endeavor Strait. December 24, 1908.
Length 163 mm.

15737. Endeavor Strait. December 23,
1908. Length 140 mm.

18281. Calera Bay, Mindoro. June 9,
1908. Length 193 mm.

13059. Goroamo Island. December 3, 1909.
Length 135 mm.

22774. Busin Harbor, Burias Island. April 23, 1908. Length 100 mm.

Three examples. Calangaman Island, between Leyte and Cebu. March 16, 1909. Length 118 to 132 mm.

22839. Isabel Channel, Basilan Island. September 11, 1909. Length 84 mm.

Two examples. Makesi Island, Palawan. April 5, 1909. Length 85 to 94 mm.

22738. Port Maricaban, Luzon. July 21, 1908. Length 109 mm.

Three examples. San Miguel Harbor, Ticao Island. April 21, 1908. Length 87 to 108 mm.

22736. Talise Island. November 9, 1909. Length 93 mm.

filaments $\frac{3}{5}$ of gill rakers.

Scales 25 or 26 in lateral line to caudal base and 3 or 4 more on latter; 2 or 3 scales above, 7 below, 9 or 10 predorsal from median keel nearly to middle of interorbital, 2 rows on cheeks; caudal with small scales basally; dorsals and anals with basal scale sheaths. Scales with 4 or 5 basal radiating striae; circuli fine, especially apically.

D. VII, I, 10, I, second spine $1\frac{2}{5}$ to 2 in total head length; first ray $1\frac{7}{8}$ to $2\frac{1}{5}$; A. III, 8, I, third spine $1\frac{4}{5}$ to $2\frac{1}{5}$; caudal $1\frac{1}{5}$ to $1\frac{1}{4}$, deeply emarginate; least depth of caudal peduncle $2\frac{2}{5}$ to $2\frac{4}{5}$; pectoral $1\frac{2}{5}$ to $1\frac{1}{2}$; ventral $1\frac{2}{5}$ to $1\frac{7}{8}$.

Back and above pale brown, below lighter or whitish, upper surfaces

One example. [148].

792

Length 150 mm.

45 specimens. Below mouth of Mindanao River, Mindanao. May 20, 1908. Length 32 to 68 mm.

23751 to 23753. Mantaguin Bay, Palawan Island. April 2, 1909. Length 69 to 86 mm.

8486. Port Dupon, Leyte Island. March 17, 1909. Length 56 mm.

1 example. h. Lat. $20^{\circ}31'E$. Long. $115^{\circ}49'$ in 265 fathoms (China Sea, vicinity of southern Luzon Island). Length 18 mm. August 8, 1909.

1 example. Philippines. Length 81 mm.

23584 to 23586. Lifu Bay, Bouro Island. December 10, 1909. Length 65 to 81 mm. 12 examples.

U. S. N. M., no. 52121. no locality.⁷⁹³
Seiff Expedition. Length 125? to 156
mm. Two examples. Both have a
spine in the larger posterior nostril.

U. S. N. M., no. 56225. Balan, Philippines.
Bureau of Fisheries 3919. Length 133
mm.

U. S. N. M., no. 58055. Zamboanga.
Dr. E. A. Mearns. Length 198 to 218 mm.
Three examples.

A. N. S. P., no. . Philippines.
Commercial Museum of Philadelphia.
Length 43 to 117 mm.

4626. Bubuan Island. February 14,
- 1909. Length 185 mm.

12205. Benguh Island, Balabac.
January 5, 1909. Length 225 mm.

5625. Busin Harbor, Burias Island.
April 22, 1908. Length 245 mm.

17699. Busin Harbor. March 8, 1909.
Length 152 mm.

9343 and 9346. Cagayan^{Sulu} Island.
January 8, 1909. Length 146 to 200 mm.

7849, 7861, 9444, 9445, 9447, 12928.

Candaraman Island, Balabac. January
4, 1909. Length 170 to 193 mm.

8028. Capulaan Bay, Luzon. February
24, 1909. Length 225 mm.

11853. Paracaran, Batan Island.
June 8, 1909. Length 133 mm.

794

Holocentrus elongatus Bliss

Holocentrum elongatum (Steindachner)
Bliss, Trans. Roy. Soc. Arts Sci.
Mauritius, new ser., vol. 11, p. 52, 1883
(type locality, Mauritius).

Depth $3\frac{1}{3}$ in total; head $3\frac{1}{3}$. Snout $3\frac{3}{4}$ in head; eye $3\frac{3}{4}$; maxillary reaches $\frac{1}{2}$ in eye; lower jaw projects; interorbital 5 in head; preopercle spine $\frac{1}{2}$ height hind preopercle edge.

Scales 48 in lateral line; 3 above, 6 below.

D. XI, I, 13, fourth to sixth spines longest, 3 in head, soft dorsal 2 in body height; A. IV, 9, third spine longer and stronger than fourth, 5 in total (without caudal); caudal lobes equal, 5 in total length; paired fins equal.

In life rose red on back and head, shading light pink on belly. Vertical fins cherry red. Spinous dorsal with series of light rose colored spots.

along middle; membrane behind
tip of each spine light pink. In
alcohol uniform whitish, spots on
dorsal darker than on rest of fin.
(Bliss.)

Mauritius.

Point, Luzon. June 24,
m.

May 26,

1908. Length 280 mm.

6033. Little Santa Cruz Island. May 28,
1908. Length 287 mm.

8319. Lode Bay, Astacado Island.
March 13, 1909. Length 278 mm.

9001. Mactan Cove, Mactan Island, Cebu.
April 6, 1908. Length 217 mm.

11243. Mactan Island. March 25, 1909.
Length 263 mm.

8443, 8444. Mactan Island. March 25, 1909.
Length 237 to 258 mm.

8831, 16370. Maculabo Island. June 14,
1909. Length 221 to 270 mm.

9203, 16950. Makinog, Camiguin Island.
August 3, 1909. Length 251 to 275 mm.

11872, 12424. Malabang market, Mindanao.
May 22, 1908. Length 184 to 200 mm.

796

Holocentrus ittodai Jordan and Fowler

Holocentrus ittodai Jordan and Fowler,
Proc. U. S. Nat. Mus., vol. 26, p. 16, fig. 2,
1902 (type locality, Waka, Okinawa). —

Snyder, Proc. U. S. Nat. Mus., vol. 42,
p. 495, 1912 (reference). — Jordan,
Tanaka, Snyder, Journ. College Sci.
Tokyo, vol. 33, p. 116, 1913 (Waka;
Kagoshima).

Jordan and Starks, Proc. U. S. Nat. Mus., vol. 32, p. 494, June 15, 1907, (Waka).

Depth $3 \frac{1}{6}$; head $2 \frac{7}{8}$. Snout
5 in head; eye $2 \frac{1}{2}$, greatly
exceeds snout; maxillary reaches
 $\frac{2}{5}$ in eye, length in profile $3 \frac{1}{3}$
in head; interorbital slightly
concave; preopercular spine short,
 $2 \frac{2}{3}$ in eye; opercle with 2 short
spines, lower little shorter.
Gill rakers 5 + 11, slender, pointed,
rather poorly developed.

Scales 48 in lateral line; 3
above, 7 below, 5 rows on cheek.
Lateral line complete, nearly
axial along side of body.

797

D. XI, 14, third spine 2 in head, third branched ray $1\frac{3}{4}$; A. IV, 11, third spine $1\frac{1}{8}$, first anal ray $1\frac{1}{4}$; caudal $1\frac{1}{6}$, emarginate behind; least depth of caudal peduncle $3\frac{3}{4}$; pectoral $1\frac{3}{4}$, rays I, 13; ventral $1\frac{1}{3}$ in head, rays I, 7.

Red. Sides with 11 white longitudinal bands following course of scales. Spinous dorsal with narrow white longitudinal band running not far from base of fin, above which in front broad blackish band, distinct between first 3 spines only.

Rui Rui.

bands, as 2 above lateral line and 7 below. Length 228 mm. and caudal filament 177 mm. (Valenciennes.)

A doubtful species with questionable locality, ^{though, likely of the Indo-Pacific.} The original figure, however, clearly shows increased scales on the cheek so that I feel obliged to let the species fall with Dentex. The specific name filamentosus is in no way invalidated in Dentex.

Stanford Museum. Rapa,
Okinawa, Rii Kii. Length 125
mm. Type.

Com 129

509

Dentex filamentosus Valenciennes

Dentex filamentosus Valenciennes, Hist.
Nat. Poiss., vol. 7, 1830, p. 254, pl. 155.

Surinam.

Hemipterus filamentosus Swainson,
Nat. Hist. Animals, vol. 2, 1839, p. 223
(on Valenciennes pl. 155).

Synagris macronemus Günther, Cat.
Fishes Brit. Mus., vol. 1, 1859, p. 380
(on Valenciennes 1830).

Hemipterus macronemus Jordan and Fesler,
Rep. U. S. Fish Comm., pt. 17, 1889 (1893), p.
505 (note; doubts Surinam as locality).

Depth 3; head 3, upper profile oblique.
Snout $3\frac{1}{3}$ in head; eye 4, $1\frac{1}{5}$ in
snout; maxillary reaches $\frac{1}{2}$ in eye,
expansion 2 in eye, length $2\frac{4}{5}$ in
head; 8 upper moderate canines,
lower teeth all small; interorbital

799

Holocentrus opercularis Valenciennes

Holocentrum operculare Valenciennes, Hist. Nat. Poiss., vol. 7, p. 501, 1831 (type locality, Carteret Harbor, New Ireland). —

Duoy and Gaimard, Voy. Astrolabe, Zool., vol. 3, p. 676, pl. 14, fig. 1, 1834

— Bleeker, Natuurk. Tijds. Ned. Indië, vol. 2, p. (226) 233, 1851 (Banda, Neira).

— Günther, Cat. Fish. Brit. Mus., vol. 1, p. 47, 1859 (compiled). — Bleeker,

— Schmeltz, Cat. Mus. Godeffroy, no. 3, p. 36, 1866 (Society Islands).

pl. 66, fig. 11, 1878 (Uelew, Samoa, Friendly, Tuamotu Islands). — Schmeltz, Cat. Mus. Godeffroy, no. 6, p. 11, 1877 (Vavau). — Pöhl, Cat. Mus. Godeffroy, no. 10, p. 30, 1884 (Vavau). — Meyer, An. Soc. Españ. Hist. Nat. Madrid, vol. 14, p. 22, 1885 (Siao, Vangi). — Steindachner, Sitzs. Ber. Akad. Wiss. Wien, vol. 115, pt. 1, p. 1375, 1906 (Upolu). — Weber and Beaufort, Fishes Indo Austral. Archip., vol. 5, p. 232, 1929 (Banda).

799

Holocentrus opercularis Valenciennes

Holocentrum operculare Valenciennes, Hist. Nat. Poiss., vol. 7, p. 501, 1831 (type locality, Carteret Harbor, New Ireland). —

Duoy and Gaimard, Voy. Astrolabe, Zool., vol. 3, p. 676, pl. 14, fig. 1, 1834

— Bleeker, Natuurk. Tijds. Ned. Indië, vol. 2, p. (226) 233, 1851 (Banda, heira).

— Günther, Cat. Fish. Brit. Mus., vol. 1, p. 47, 1859 (compiled). — Bleeker,

Ned. Tijds. Dierk., vol. 4, p. 211, 1874

(Sumatra, Flores, Banda). — Günther,

Journ. Mus. Godeffroy, vol. 4, p. 100, pl. 66, fig. A, 1875 (Pelew, Samoa, Friendly, Tuamoto Islands).

— Schmeltz,

Cat. Mus. Godeffroy, no. 6, p. 11, 1877

(Vavau). — Pöhl, Cat. Mus. Godeffroy,

no. 10, p. 30, 1884 (Vavau). — Meyer,

An. Soc. Españ. Hist. Nat. Madrid, vol.

14, p. 22, 1885 (Siao, Vangi). — Steindachner,

Sitzs. Ber. Akad. Wiss. Wien, vol. 115, pt. 1,

p. 1375, 1906 (Upolu). — Weber and Beaufort,

Fishes Indo Austral. Archip., vol. 5, p. 232,

1929 (Banda).

outer surface
divisions

somewhat purplish on outer surface
without distinct color divisions.

— Günther,
h. 47, 1859 (cat.
red. Tijds.
Sumatra, 7
town. Mus. 18
pl. 66, fig. 10

Holocentrus opercularis Bleeker, ned.
Syds. Dierk., vol. 1, p. 249, 1863 (Flores).
Seale, Oceas. Pap. Bishop Mus., vol.
 4, no. 1, p. 24, 1906 (Tahiti). — Jordan
 and Seale, Bull. Bur. Fisher., vol. 25,
 p. 227, 1905 (1906) (Pago Pago). — Kendall
 and Radcliffe, Mem. Mus. Comp. Zool.,
 vol. 35, p. 95, 1912 (Rikitea, Mangareva).
 — Fowler and Ball, Bull. Bishop Mus.,
 no. 26, p. 10, 1925 (Wake Island). —
Fowler, Mem. Bishop Mus., vol. 10, p. 105,
 1929 (Tahiti, Rikitea, Samoa, Society, Wake
 Islands); vol. 11, no. 5, p. 322, 1931
 (reference).

Holocentrus sammara (not Forsthal) Kendall
 and Radcliffe, Mem. Mus. Comp. Zool.,
 vol. 35, p. 95, 1911 (Mangareva; specimen
 128 mm [5 inches] long).

801

Depth $2\frac{7}{8}$ to $3\frac{1}{4}$; head $2\frac{3}{5}$; width $2\frac{3}{5}$. Snout $3\frac{1}{5}$ to $3\frac{1}{4}$ in head from snout tip; eye 3 to $3\frac{3}{5}$, 1 to $1\frac{1}{5}$ in snout, slightly exceeds interorbital; maxillary reaches $\frac{1}{3}$ to $\frac{2}{5}$ in eye, expansion 2 in eye, length $2\frac{1}{5}$ to $2\frac{1}{4}$ in head from snout tip; interorbital 5 to $5\frac{1}{5}$, low, little concave medially; 2 opercular spines, upper larger or $2\frac{3}{5}$ to $4\frac{1}{2}$; preopercular spine $2\frac{1}{4}$ to $3\frac{1}{5}$. Gill rakers 7 + 12, of which 6 upper and 5 lower rudimentary; equal gill filaments or 3 in eye.

Scales 34 to 36 in lateral line to caudal base and 4 more on latter; 4 above, 7 or 8 below, 8 or 9 predorsal, 6 rows on cheeks. Scales with 2 or 3 short, low, median, close set, basal points; row of-

824

Body deep purple, abdomen smoky brown. Broad creamy band from nape to pectoral, sometimes narrowing below pectoral to point or may include whole breast. Snout and interorbital yellowish brown, rest of head smoke brown, with small to large scattered yellow spots. Dorsal and anal like body, with narrow white border. Caudal and ventrals yellow. Pectorals purple, upper 2 rays and broad terminal border creamy. Length 178 mm. (Ogilby.)

Lord Howe Island, Queensland and West Australia.

15 to 35 apical denticles, median largest; circuli very fine, not extended apically.

D. XI, I, 12, I or XI, 13, I, third spine $2\frac{1}{8}$ to $2\frac{1}{2}$ in total head length, third branched ray $2\frac{1}{6}$ to $2\frac{1}{4}$; A. IV, 9, I, fourth spine $1\frac{3}{5}$ to $1\frac{7}{8}$, first branched ray $1\frac{2}{3}$ to $2\frac{1}{8}$; caudal $1\frac{3}{4}$, deeply forked; least depth of caudal peduncle $4\frac{3}{5}$ to $5\frac{1}{8}$; pectoral $1\frac{4}{5}$ to $1\frac{7}{8}$; ventral $1\frac{3}{4}$ to 2.

Brown, paler below. On back and sides each scale with dark brown or brown basal spot. Fins all pale or light brown generally. Spinous dorsal with broad black longitudinal band medially, light brown like other fins marginally and basally.

Purplish brown. Broad yellow band from below 3 front dorsal spines across opercle and pectoral base to ventral and belly. Second band from sixth dorsal spine to caudal peduncle, sometimes across latter. Dorsal and anal purple, with numerous pale blue waved and often interrupted horizontal lines. Caudal and paired fins yellow. Reaches 195 mm. (Dgilby.)
Queensland.

East Indies, Melanesia, Micronesia, Polynesia. Agrees largely with the figure of Garrett, as reproduced by Günther, except in details of coloration. Garrett's figure shows the spinous dorsal black with a subbasal white line. Also its body scales are largely uniform or without dark basal blotches.

One example. [1550.]

Length 170 mm.

825

Holacanthus duboulayi Günther.

Holacanthus duboulayi Günther, Ann.
Mag. Nat. Hist. London, vol. 20, series 3,
1867, p. 67. North west coast of Australia.

— McCulloch, Records Austral. Mus.,
vol. 9, pt. 3, 1913, p. 360, plate 14 (Rat
Island, Port Curtis and Cape York,
Queensland).

Chaetodontophus duboulayi Ogilby,
Mem. Queensland Mus., vol. 3, 1915, p.
112 (Moreton Bay, Port Curtis and
Rockingham Bay). — Ogilby, l.c., vol. 5,
1916, p. 179 (Hervey Bay).

Holacanthus darwiniensis Kent, Proc.
Roy. Soc. Queensland, vol. 6, 1890, p. 235.
Darwin.

804

U. S. N. M., no. 52198. Samoa.
Bureau of Fisheries. Length 118 mm.

U. S. N. M., no. 65537. Rikitea,
Mangareva. Albatross Collection.
Length 256 mm.

U. S. N. M., no. 65539. Mangareva.
Bureau of Fisheries. Length 126 mm.
As Holocentrus sammara. "Iridescent,
finely ground; no brown spot on
each scale; black center of dorsal
membrane white above and below;
margin of vertical fins vermillion;
bar across cheeks and nose same,
but lighter; chin pale pink, also
anal spines; opercle and soft
fins brown; center of caudal
yellow; dorsal and anal less
markedly so."

824

Holacanthus chrysocephalus Bleeker.

Holacanthus chrysocephalus Bleeker, Nat.

Tijds. Ned. Indië, deel 7, 1854, p. 428. Batavia.

— Günther, Cat. Fish Brit. Mus., vol. 2,
1860, p. 54 (copied).

Chaetodontophus chrysocephalus Bleeker,

Atlas Ichth. Ind. Néerl., vol. 7, 1877, p.

56, plate (6) 368, fig. 4 (type).

Differs from Holacanthus mesoleucus
according to Bleeker in its deep golden
color and absence of the black ocular
band. Head, chest and trunk anteriorly
with blue, irregular or waved horizontal
lines. Dorsals with blue horizontal
line and anal with 2 similar blue
lines. Length 170 mm.

705

Holocentrus diadema Lacépède

Holocentrus diadema Lacépède, Hist. nat. Poiss., vol. 4, pp. 335, 372, 1802; vol. 3, pl. 32, fig. 3, 1802 (type locality, "manuscrit chinois"). — Rüppell, Atlas Reis. nördl. Afrika, p. 84, pl. 22, fig. 2, 1828 (Mohila, Red Sea).

— Bleeker, Nat. Tijds. Ned. Indië, vol. 9, p. 106, 1855 (Sabu, Halmahera); Ned. Tijds. Dierk., vol. 1, p. 267, 1863 (Sitapupu, Timor); vol. 2, p. 142, 1865 (Buru).

— Fowler, Proc. Acad. Nat. Sci. Philadelphia, p. 501, 1900 (Hawaiian Islands). — Seale, Occas. Pap. Bishop Mus., vol. 1, no. 3, p. 68, 1900 (1901) (Guam). — Bryan and Herre, Occas. Pap. Bishop Mus., vol. 2, no. 1, p. 128, 1902 (1903) (Marcus Island). — Jenkins, Bull. U. S. Fish Comm., vol. 22, p. 440, 1902 (1903) (Honolulu). — Snyder, Bull. U. S. Fish Comm., vol. 22, p. 523, 1902 (1904) (Honolulu, Laysan, off Molokai in 8 fathoms). — Jordan and Evermann, Bull. U. S. Fish Comm.,

vol. 23, pt. 1, p. 159, pl. 10, 1903 (1905)
 (Honolulu; Hilo). — Seale, Occas. Pap.
 Bishop Mus., vol. 4, no. 1, p. 24, 1906
 (Tahiti, Faté, Mukuhiwa). — Jordan and
Seale, Bull. Bur. Fisher., vol. 25, p.
 225, 1905 (1906) (Pago Pago). — Kendall
 and Goldsbrough, Mem. Mus. Comp. Zool.,
 vol. 26, p. 265, 1911 (Fakarava). —
Kendall and Radcliffe, Mem. Mus.
 Comp. Zool., vol. 35, p. 95, 1912 (Rikitea).
 — Fowler, Copeia, no. 58, p. 62, June
 18, 1918 (Philippines). — Fowler and
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(Honolulu).

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Society Islands). — Lesson, Voy. Cognille,
Poiss., vol. 2, pt. 1, p. 220, pl. 25, fig. 2,
1830 (Beula Bay, Borabora). —

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p. 319, 1853 (Amboina); vol. 6, p. 313,
1854 (Larantuka, Flores), p. 457 (Amboina);
vol. 8, p. 296, 1855 (Ternate), p. 306 (Batoe),
p. 392 (Amboina), p. 436 (Manado,
Celebes); vol. 11, p. 385, 1856 (Kajili, Buru);
vol. 12, p. 192, 1856 (Ternate); vol. 15,
p. 159, 1858 (Prigi, Java); vol. 16, p. 28,
1858 (Amboina); Act. Soc. Sci. Ind.
Néerl., vol. 1, no. 3, p. 3, 1856 (Manado);
vol. 1, no. 5, p. 4, 1856 (Amboina); vol. 1, no. 7,

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Seas; Tonga; Fiji; Ceylon; Madagascar; India).
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Amboina). — Schmeltz, Cat. Mus. Godeffroy,
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Nederl. Tijds. Dierk., vol. 4, p. 136, 1873 (1874)
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Pollen et Van Dam, pt. 4, p. 86, 1874
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Bull. U. S. Nat. Mus., no. 7, p. 101, 1877
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Proc. Linn. Soc. New South Wales, vol. 7,
p. 352, 1882 (New Guinea). — Peters,
Trans. Roy. Soc. Arts Sci. Mauritius,

new ser., vol. 11, p. 52, 1883 (Mauritius).
— Klunzinger, Fische Roth. Meer., vol. 1,
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Mus. Godeffroy, no. 9, p. 30, 1885 (South
Sea). — Meyer, Ann. Soc. Espan. Hist.
Nat. Madrid, vol. 14, p. 22, 1885 (Ternate).
— Day, Fauna Brit. India, Fishes, vol
2, p. 95, 1889. — Sauvage, Hist.
Nat. Madagascar, Poiss. p. 33 ^{pl. 2, fig. 5} 1891. Elera, Cat. Fauna Filipinas, vol. 1, p.
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Paragua). — Steindachner, Abhandl.
Senckenberg. Gesell., vol. 25, p. 426, 1900
(Ternate); Denks. Akad. Wiss. Wien,
vol. 70, p. 492, 1901 (Honolulu; Laysan).
~~Gilchrist and Thompson, Ann. South
African Mus., vol. 6, pt. 3, p. 235, 1903~~
— Steindachner, Sitzb. Ber. Akad. Wiss.
Wien, vol. 115, pt. 1, p. 1374, 1906 (Upolu).
— Weber, Siboga Exped., vol. 57, Fishes,
p. 180, 1913 (Biaru Island).
— Pellegrin, Bull. Soc. Zool. France,
vol. 39, p. 224, 1914 (Diego Suarez, Madagascar).
— Barnard, Ann. South African Mus.,
vol. 21, pt. 1, p. 366, June 1925 (Katal;

Buru, East India)

Delagoa Bay). — Weber and Beaufort,
Fishes Indo Austral. Archip., vol. 5,
 p. 238, 1929 (Simalur, Biaru, Flores,
 Banda). — Chevey, Inst. Océan. Indo
Chien, 19^e note, pt. 20, August 25, 1932
 (Iles Paracels). — Gillay, Mus. Roy.
Hist. Nat. Belg., vol. 5, pt. 3, p. 50, April
 30, 1933 (Banda, heira; Goenoeng Api).

Perca pulchella Bennett, Zool. Journ.,
 vol. 3, p. 377, pl. 9, fig. 3, 1827 (type
 locality, Sumatra).

Sciaena vittata (Parkinson) Valenciennes,
Hist. Nat. Poiss., vol. 3, p. 159, 1829
 (name in synonymy).

Holocentrum sp. Gilchrist and Thompson,
Ann. South Afric. Mus., vol. 6, pt. 3, p.
 325, December 31, 1908 (Natal).

Depth $2\frac{2}{3}$ to 3; head $2\frac{3}{4}$ to $3\frac{2}{5}$, width 2 to $2\frac{1}{10}$. Snout $3\frac{3}{4}$ to $4\frac{2}{5}$ in head; eye $2\frac{1}{2}$ to $3\frac{1}{5}$, greater than snout or interorbital; maxillary reaches $\frac{1}{4}$ to $\frac{2}{5}$ in eye, expansion $2\frac{1}{8}$ to 3, length 3 to $3\frac{1}{8}$ in head; interorbital $4\frac{1}{8}$ to $4\frac{3}{5}$, low, depressed slightly concave medially; preopercular spine about long as upper opercular or $\frac{2}{5}$ of orbit. Gill rakers 6 + 13, lanceolate, $1\frac{1}{5}$ in gill filaments.

Scales 46 or 47 in lateral line to caudal base; 3 above, 7 or 8 below, 8 or 9 predorsal, 5 rows on cheeks. Scales with 5 short low close set short points on nearly straight basal edge; apically row of 24 or 25 denticles, medially longest; circuli fine.

Air vessel large, bifurcated behind.
Pyloric appendages rather few.
Intestine long. Vertebrae 21 to 23
(= 9 or 8 + 12 to 14). Scales very small,
firmly attached. Lateral line continuous
to caudal base. Dorsal single, with
strong spines and soft fin usually
larger than spinous. Anal like soft
dorsal. Pectoral moderate. Ventrals
present, usually with spine and 5
rays.

Herbivorous tropical fishes, many
dark though often with some brilliance,
others notable for their contrast or
deep bodies. All are dangerous to
handle, as by lashing the tail from side
to side they are able to inflict severe
or dangerous wounds on the incautious
by means of the dreaded caudal spine.

D. XI, 12, I or XI, 13, I, fourth^{8/12}
spine $1\frac{7}{8}$ to 2 in head, second ray
 $1\frac{7}{8}$ to 2; A. IV, 8, I to IV, 9, I,
third spine $1\frac{1}{3}$ to $1\frac{2}{5}$, first ray
 $1\frac{1}{4}$ to $1\frac{1}{3}$; caudal $1\frac{1}{3}$ to $1\frac{2}{5}$,
forked; least depth of caudal
peduncle $3\frac{7}{8}$ to 4; pectoral $1\frac{2}{5}$
to $1\frac{2}{3}$; ventral $1\frac{1}{10}$ to $1\frac{1}{5}$.

Red or olive, with light^{10 or 11} ~~xxxx~~
white longitudinal bands, one
along each scale row. Spinous
dorsal membranes black, with
median longitudinal white band
which subbasal in anterior part
of its course and subterminal in
posterior part; upper edge of fin
also sometimes white. Membranes
between third and fourth anal
spines dark.

Red Sea, Zanzibar, Portuguese

(Ceylon); Mem. Bishop Mus., vol. 10, 1928, p. 213 (Guam, Moen, Suva); Proc. Acad. Nat. Sci. Philadelphia, 1929 (1930), p. 609 (Hong Kong), p. 642 (Guam).

Lethrinus molnisi Bleeker, Natuurk.
Tijdschr. Nederl. Indië, vol. 9, 1855, p. 435. Obi Major; Batjan. Günther,
Cat. Fishes Brit. Mus., vol. 1, 1859, p. 455
 (Corang; Louisiades); Journ. Mus. Godeffroy, vols. 2-3, pts. 5-6, 1874, p. 64, pl. 46 A (Pannotu, Society, Friendly, Samoa, Hervey, Kingmills, Pelew, Louisiades, Molucca Islands).
¹/_m Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876-77, p. 115, pl. (19) 297, fig. 3 (Batjan, Obi Major, Timor). ¹/_m Schmeltz,
Cat. Mus. Godeffroy, no. 6, 1877, p. 12.
¹/_m Pöhl, Cat. Mus. Godeffroy, no. 9, 1884, p. 29 (Pelew Islands).
¹/_m Meyer, Ann. Soc. Españ. Hist. Nat. Madrid, vol. 14, 1885,

East Africa, Natal, Madagascar,
Madagascar, India, Ceylon, East
Indies, Micronesia, Polynesia,
Hawaii. A species easily known
by its black spinous dorsal in
combination with its red and white
longitudinal bands. It is quite
constant in its opercular spines,
which are usually with the upper
greatly longer and stronger than
the lower opercular.

Lethrinus reticulatus Valenciennes

Lethrinus reticulatus Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 76. New Guinea.
 $\frac{1}{27}$ Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 457 (compiled). $\frac{1}{27}$ Martens, Preuss. Exped. Ost Asien, 1876, p. 387 (Larentuka, Flores). $\frac{1}{27}$ Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876-77, p. 116, pl. (52) 330, fig. 1 (Celebes, Ternate, Butjun, Amboina, Banda, New Guinea). $\frac{1}{27}$ Klunzinger, Sitz. Ber. Akad. Wiss. Wien, Math.-naturwiss. Classe, vol. 80, pt. 1, 1879, p. 357 (Endeavor River and Port Denison). $\frac{1}{27}$ Meyer, An. Soc. Españ. Hist. Nat. Madrid, vol. 14, 1885, p. 19 (Kordo, Mysore). $\frac{1}{27}$ Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 281 (San Fernando, Orion, Philippines); Journ. Bombay Nat. Hist. Soc., vol. 32, no. 4, May 31, 1928, p. 709

One example. Bolalo Bay, Palawan.
December 21, 1908. [965.]

22934. Inamucan Bay, Mindanao.
August 9, 1909. Length 58 mm.

One example. Mabesi Island,
Palawan. April 5, 1909. Length 107
mm.

21974. Murcielagos Bay,
Mindanao. August 9, 1909. Length 57
mm.

22737. Port Maricaban, Luzon.
July 21, 1908. Length 111 mm.

6695. Singaan Island, north of
Tawi Tawi. September 21, 1909. Length
143 mm.

22642, 22643. Talise Island.
November 9, 1909. Length 56 to 90 mm.

band. Fins all pale to whitish, front edges of both dorsals rather narrowly brownish.

This species was known to Bleeker from a single example 64 mm. long obtained at Kajeli. To the present time it does not seem to have been obtained except as represented by our materials.

U. S. N. M., No. 12677. Zanzibar.
British Museum. Length 78 mm.

U. S. N. M., No. 15109. Samoa.
Steinberger. Length 76 to 78 mm.
Two examples.

U. S. N. M., No. 51120. Hawaiian
Islands. U. S. Fish Comm. (04251,
04253). Length 140 to 163 mm.
Two examples.

U. S. N. M., No. 52391. Apia, Samoa.
Bureau of Fisheries (07415). Length
67 to 129 mm. Twelve examples.

U. S. N. M., No. 55097. Laysan. May 1902.
Albatross Collection. Length 120 to 160
mm. Seven examples.

U. S. N. M., No. 55294.

Albatross ~~Collection~~ Collection (3834). 1902.
Length 112 mm.

5725. Surigao, Mindanao. May 8,
1908. Length 335 mm.

4711. Tataan, Sulu Island,
Tawi Tawi Group. February 19, 1908.
Length 280 mm.

5818 and 5819. Tataidaga Point,
Pujada Bay, Mindanao. May 15, 1908.
Length 235 to 257 mm. Back generally
yellowish green; scales bordered with
ochraceous brown, become paler below;
almost white on breast with some
yellowish shades. Variable blackish
bars cross sides of body with centers
of scales nearly isia. Bronze behind
and over eye. Brown occipital crescent.
Forehead and snout with orange spots.
Preorbital with reddish bar. Cheek
bluish, mottled with yellowish green.
Fins vermilion.

U.S.N.M., No. 56992. Apia, Samoa. ^{8/16}
Bureau of Fisheries (07417). Length
65 to 115 mm. 27 examples.

U.S.N.M., No. 65531. Rikitea,
Mangareva, coral reef. Albatross
Collection. Length 110 to 138 mm.
Four examples.

847
7711. Ulugan Bay, Oyster Inlet.
December 29, 1909. Length 165 mm.

6670. Varadero Bay, Mindoro. July 23, 1908.
Length 151 mm.

6935, 6942 to 6945, 6972 and 6973. West
coast of Sablan Island. November 8, 1908.
Length 152 to 189 mm.

22969 and 22970. Limbe Strait, Celebes.
November 9, 1909. Length 65 to 70 mm. Pale form.

657. Nan Wan, Formosa. January 25, 1900.
Length 125 mm.

15415. Hokenho, Foo Wan, Formosa.
January 29, 1910. Length 115 mm.

8019. Reefs in Apra Bay, Guam.
November 19 - 21, 1907. Length 95 mm.

817

Holocentrus melanopterus ^{to} Bleeker

Holocentrum melanopterus Bleeker,
Nat. Tijds. Ned. Indië, vol. 9, p. (284)
302, 1855 (type locality, Manado, Celebes);
vol. 2, p. 385, 1856 (Kajeli, Buru); vol.
19, p. 329, 1859 (Patjitan, Java).
Holocentrum melanopterus Günther, Cat. Fish.
Brit. Mus., vol. 1, p. 43, 1859 (copied).

Holocentrus melanopterus Bleeker,
Ned. Tijds. Dierk., vol. 2, p. 142, 1865
(Buru).

Holocentrum melanopterus Bleeker, Nat.
Tijds. Ned. Indië, vol. 13, p. 370, 1857
(Sangi); Act. Soc. Sci. Ind. Néerl., vol.
3, no. 4, p. 2, 1857-58 (Manado);

Günther, Cat. Fish. Brit. Mus., vol. 1, p. 43, 1859.

~~Bleeker~~ Ned. Tijds. Dierk., vol. 4, p. 217,
1874 (Celebes, Flores, Sangi, Buru, Amboina,
Ceram); Atlas Ichth. Ind. Néerl., vol. 9,
pl. (3) 357, fig. 2, 1877. — Elera, Cat. Fauna
Filipinas, vol. 1, p. 456, 1895 (Mindoro,
Culion, Calamianes, Paragua, Puerta Princesa).

— Weber, Siboga Exped., vol. 57, Fische, ⁸¹⁸
p. 182, 1913 (Savu Island).

— Weber and Beaufort, Fishes Indo-
Austral. Archip., vol. 5, p. 242, 1929
(Savu).

Holocentrus melanopterus Bleeker, Ned.
Tijds. Dierk., vol. 1, p. 249, 1863 (Flores).

— Fowler, Mem. Bishop Mus., vol. 10, p.
102, 1928 (Agaña, Guam).

819
The material representing this species is an interesting Rhynchichthys stage, greatly like Bleeker's colored figure of Holocentrum melanopterus, but differing chiefly in the pointed and protruding snout.

naked, except scales on cheek and opercles. Each tube of lateral line well exposed, with small exposed basal scale. ^{Scales with} 10 or 11 basal radiating striae; 30 to 57 apical denticles in 2 or 3 transverse series; circuli moderate.

D. VII - I, 9, I, second spine $2\frac{1}{2}$ to $2\frac{2}{5}$ in total head length, first ray $1\frac{1}{3}$ to $1\frac{1}{2}$; A. IV, $1\frac{1}{2}$, I or $1\frac{1}{3}$, I, second spine $2\frac{3}{5}$ to 3, first ray $1\frac{2}{3}$ to $1\frac{7}{8}$; caudal $1\frac{1}{5}$ to $1\frac{1}{3}$, slightly concave behind; least depth of caudal peduncle $2\frac{1}{2}$ to $2\frac{7}{8}$; pectoral $1\frac{2}{5}$ to $1\frac{1}{2}$; ventral $1\frac{7}{8}$ to 2.

Light brown generally, much paler below, with silvery to lilac or pale purplish tinge on lower half of trunk and front of tail.

One example. Lampiran Island.
September 11, 1909. Length 32 mm.

Two examples. Port Dupon, Leyte.
May 6, 1908. Length of both 32 mm.

One example. Looe, Lubang
Island. July 18, 1908. Length 32 mm.

One example. Sacol Island.
September 8, 1908. Length 33 mm.

Two examples. Limbe Strait, Celebes.
November 9, 1909. Length 30 and 31 mm.

One example. Tifu Bay, Bouro
Island. December 10, 1909. Length
35 mm.

One example. Tomahu Island.
December 11, 1909. Length 33 mm.

Depth $2\frac{2}{3}$ to 3; head $2\frac{2}{3}$ to $2\frac{1}{2}$, width $2\frac{1}{5}$ to $2\frac{2}{5}$. Snout 4 to $4\frac{1}{2}$ in head from snout tip; eye $3\frac{2}{5}$ to $3\frac{1}{2}$, greater than snout, or interorbital; maxillary reaches $\frac{1}{2}$ to $\frac{3}{5}$ in eye, expansion $2\frac{1}{3}$ to $2\frac{3}{5}$, length $2\frac{1}{5}$ to $2\frac{1}{4}$ in head; teeth villiform, in rather narrow bands in jaws and on vomer and palatines; interorbital $4\frac{3}{5}$ to $5\frac{1}{3}$, very slightly convex; preopercle ~~ridge~~ ridge entire or only with short spine at angle and edge serrated. Gill rakers 6 + 16, of which 2 upper rudiments, others lanceolate or $\frac{1}{2}$ of eye.

Scales 23 or 24 in lateral line to caudal base and 4 or 5 more on latter, 2 above, 6 below, 6 or 7 predorsal, 2 rows on cheek; head

821

Holocentrus vexillarius Poey

Holocentrum vexillarium Poey, Mem.
Hist. Nat. Cuba, vol. 2, p. 158, 1860
(type locality, Cuba).

Holocentrus vexillarius Jordan and
Evermann, Bull. U. S. Nat. Mus., no. 47,
pt. 1, p. 852, 1896 (copied). — B. A. Bean,
The Bahama Islands, p. 301, 1905
(Abaco). — Week and Hildebrand, Field Mus.
— Evermann and Marsh, Bull. U. S. Fish
Comm., vol. 20, pt. 1, 1900⁽¹⁹⁰²⁾, p. 119. (Ponce; Guanica)
Publ. no. 215, Zool. Ser. vol. 15, p. 299, December 20, 1923
(Colon; Porto Bello). — Nichols, N. Y. Acad. Sci., Sci. Survey
Porto Rico and Virgin Is., vol. 10, p. 72,
p. 227, fig. 77, 1929.

Holocentrum riparium Poey, Enumerat.
Pisc. Cuba, p. 37, 1875 (type locality,
Cuba).

Depth $2\frac{4}{5}$ to $2\frac{7}{8}$; head $2\frac{3}{4}$ to $2\frac{4}{5}$, width $1\frac{7}{8}$ to 2. Snout $3\frac{7}{8}$ to $5\frac{2}{5}$ in head from snout tip; eye $2\frac{1}{3}$ to 3, greatly exceeds snout or interorbital; maxillary reaches $\frac{1}{4}$ to $\frac{1}{3}$ in eye, expansion 3 to $3\frac{1}{2}$ in eye, length $2\frac{2}{5}$ to 3 in head from snout tip; interorbital $3\frac{2}{3}$ to 4, low, slightly concave medially; 2 opercular spines subequal, $2\frac{1}{2}$ to $4\frac{1}{2}$ in eye; preopercular spine $2\frac{1}{2}$ to $3\frac{1}{2}$. Gill rakers 5 + 11, of which 4 upper and 3 lower rudimentary; length $1\frac{3}{4}$ in gill filaments, which $2\frac{1}{4}$ in eye.

Scales 38 to 41 in lateral line to caudal base and 3 or 4 more on latter; 4 above, 8 below, 7 predorsal, 5 rows on cheek.

Lethrinus richardsoni Günther, Cat. Fishes
 British Mus., vol. 1, 1859, p. 456, China Sea
¹/_m Schmeltz, Cat. Mus. Godeffroy, no. 7, 1881, p. 5 (China).
 and Hong Kong, ¹/_m Ishikawa and Matsuura,
 Prelim. Cat. Fishes Mus. Tokyo, 1897, p. 53.
¹/_m Rutter, Proc. Acad. Nat. Sci. Philadelphia,
 1897, p. 76 (compiled). ¹/_m Smith and Pope,
 Proc. U. S. Nat. Mus., vol. 31, 1906, p. 477
 (Susaki).

Lethrinus richardsoni Klunzinger, Sitz. Ber.
 Akad. Wiss. Wien, math.-naturw. Klasse,
 vol. 80, pt. 1, 1879, p. 557 (Endeavour River and
 Port Darwin). ¹/_m Sauvage, Bull. Soc. Philomath.
 Paris, series 7, vol. 5, 1886, p. 105 (Swatow, China).
¹/_m Meyer, Anal. Soc. Españ. Hist. Nat. Madrid,
 vol. 14, 1885, p. 19 (North Celebes).
Evermann and Seale, Bull. Bur. Fisher.,
 vol. 26, 1906 (1907), p. 86 (Bacon). ¹/_m Seale
 and Bean, Proc. U. S. Nat. Mus., vol. 33,
 1907, p. 244 (Zamboanga). ¹/_m Kendall and
Goldborough, Mem. Mus. Comp. Zool., vol.

Scales with 3 or 4 close set medial short basal points; row of 23 to 25 apical points, medial largest; circuli fine, close set, basal, not extended apically.

D. XI, I, 12, fourth spine 2 to $2\frac{1}{10}$ in total head length, second branched ray $1\frac{3}{4}$ to 2; A. IV, 8, I, third spine $1\frac{3}{5}$ to $1\frac{2}{3}$, first branched ray $1\frac{1}{2}$ to $1\frac{3}{5}$; caudal $1\frac{1}{4}$ to $1\frac{2}{5}$, well forked, lobes pointed; least depth of caudal peduncle 4; pectoral $1\frac{1}{3}$ to $1\frac{2}{5}$; ventral $1\frac{2}{5}$ to $1\frac{2}{3}$.

Brown above, pale to whitish below. Each row of scales on body with broad longitudinal pale or whitish band, converging on caudal peduncle. Pale bands

Cover 29

102

Lethrinus frenatus Valenciennes

Lethrinus frenatus Valenciennes, Hist. nat.

Poiss., vol. 6, 1831, pp. 291, 293. Ceylon. $\frac{1}{2m}$

Sauvage, Hist. nat. Madagascar, Poiss., 1891,
p. 200, pl. 21, fig. 1 (type).

? Lethrinus maculatus Valenciennes, Hist. nat.

Poiss., vol. 6, 1830, p. 294. Pondicherry.

Lethrinus cinereus Valenciennes, ^{West. Nat. Poiss.} ~~of. cit.~~, vol. 6,

1830, p. 293. Kuitz, Ceylon. $\frac{1}{2m}$ Day, Fishes of

India, pt. 1, 1875, p. 135 (Madras); Fauna

British India, Fishes, vol. 2, 1887, p. 38.

$\frac{1}{2m}$ Fowler, Proc. Acad. Nat. Sci. Philadelphia,

1927, p. 282 (Orani, Brin, Calapan, Bacon).

? Lethrinus erythracanthus Valenciennes, Hist.

nat. Poiss., vol. 6, 1830, p. 314. Luganor,

Marianas.

Lethrinus anatarus Richardson, Zool. Voy.

Sulphur, Fishes, 1844, p. 145. Canton; Ichth.

China Japan, 1846, p. 242 (Sea of China;

Canton).

above lateral line all narrow,
one immediately below lateral line
much broadest and greatly contrasted.
Iris pale brown to white. Fins
pale or light brown. Spinous
dorsal with deep brown blotch on
each membrane medially, and in
young first 2 blotches black.

Cuba, ^{Porto Rico,} Bahamas. A very
handsome species with broad
pale or white lateral band
close below lateral line - greatly
contrasted and distinct from
other narrower bands.

In alcohol fins white, upper surface of first pectoral ray gray and ventrals dusky on terminal third.

Length 220 mm. (Seale.)

The above from the type, apparently differing from Lethrinus karaka (Forsk.) in the more advanced dark lateral blotch above the middle of the pectoral fin.

Lethrinus hypselopterus is also very similar except for the higher soft anal, which high as long. Seale gives the type no. 5080 taken at Balabac Island, August 6, 1908, as 220 mm. long, his figure measuring 190 mm. Herre and Montalban, who later redescribe this specimen, say "it measures 177 mm. in length."

825

U. S. N. M., No. 4687. Cuba.
Prof. F. Poey. Length 48 to 69 mm.
Four examples. As Holocentrum
riparium, also next ~~four~~ four.

U. S. N. M., No. 37413. Cuba. Prof.
F. Poey. Length 64 mm.

U. S. N. M., No. 37491. Cuba. Prof.
F. Poey. Length 48 mm.

U. S. N. M., No. 37528. Cuba. Prof.
F. Poey. Length 46 to 66 mm. Ten
examples.

U. S. N. M., No. 38432. Abaco,
Bahamas. Albatross Collection.
April 10, 1905. Length 134 mm.

U. S. N. M., No. 50215. Guanica,
Porto Rico. Fish Hawk Collection.
1899. Length 102 mm.

opposite eye; head naked except opercle and 2 patches of scales behind eye, one above preopercle and other on side of nape.

D. X, 9, third spine 3 in head, third ray $2\frac{7}{8}$; A. III, 8, third spine $3\frac{1}{2}$, first ray 3; caudal $1\frac{1}{4}$, deeply emarginate; least depth of caudal peduncle 3; pectoral 1; ventral $1\frac{2}{5}$.

Yellow in life, with slight wash of grayish. In alcohol whitish, slightly grayish drab above; middle of each row of scales darker, as 4 or 5 narrow longitudinal lines above lateral line parallel with back. Large, rather indistinct oblong dusky blotch between pectoral and lateral line. Breast and upper pectoral axil grayish. Fins immaculate in life, except dusky tips of ventrals and caudal washed yellow.

Holocentrus armatus (Castelnau)

Neoniphan armatus Castelnau, Vict.

Offic. Rec. Philadelphia Exhib. (Res.
Fish. Austral.), p. 5, 1875

(type locality Cape York, Queensland).

— McCulloch and Whitley, Mem.
Queensland Mus., vol. 8, pt. 2, p.

139, July 7, 1925 (reference). —

McCulloch, Mem. Austral. Mus.,
vol. 5, pt. 1, p. 134, June 29, 1929

(reference).

— Macleay, Proc. Linn. Soc. New South
Wales, vol. 5, pt. 4, p. 515, November 24,
1880 (copied).

opercle flap crimson; crimson tinge below eye; lips pink; inside mouth and premaxillary membranes scarlet; iris golden with upper eyelid vermilion. Dorsal olive and brown, membranes tipped vermilion; soft dorsal with membranes clear vermilion. Anals dusky lemon yellow, with orange edge to soft fin. Caudal dusky and vermilion. Pectoral pale yellow, membranes clear. Ventral yellowish, front edges dusky.

5233, 5235, 5236 [1310]. Cinnahala Bay, Ragay Gulf, Luzon. March 11, 1909. Length 212 to 224 mm. [1310] Back olive, fading to pearl gray; center

Depth $3\frac{2}{3}$, somewhat convex above, straight beneath; head $2\frac{3}{4}$. Snout 3 in head; eye 3; lower jaw longer than upper; teeth numerous, villiform, none on palatines or tongue; interorbital broad, with 4 feeble longitudinal ridges; preopercle finely serrated, with long spine at lower angle; suborbital ~~strongly serrated~~; opercle crenulated and armed on upper part with 2 long spines.

Scales 38 to 40 in lateral line. Cheeks covered with rather small scales.

D. II, I, 12, third spine longest, soft dorsal high and narrow; A. III, 9, third spine equals body height; caudal bilobed; ventral rays. 7.

42154 U.S.N.M. Cape of Good Hope.
U.S. Eclipse Expedition. Length 293 mm.

Labrus macrocephalus Lacépède,
Hist. Nat. Poiss., vol. 3, 1802, pp. 432, 480,
pl. 26, fig. 1. Great Gulf of India.

Dentex macrocephalus Cuvier, Hist. Nat.
Poiss., vol. 6, 1830, p. 232 (no locality,
on drawing by Comerson). ¹/₂ Valenciennes,
Règne Animal, Cuvier, Ed. Ill., 1839, pl.
35, fig. 2.

The above three references are
for a doubtful species, perhaps to
be referred to Dentex argyrozona. The
details are probably inaccurate. The
figure shows:

Depth $2\frac{1}{2}$; head 3. Snout $2\frac{1}{10}$ in head;
eye 4, 2 in snout, equals preorbital
depth at maxillary expansion; 2 strong
upper and 3 lower canines, followed
below by 4 short strong teeth; interorbital

Pink, beneath silvery. Obscure longitudinal stripe from opercle to caudal base. On back, cheeks and lower part of body numerous round spots which form irregular lines. Top of head and back purplish. Black spot on membranes between, first, second and third dorsal spines. Length 432 mm. (Macleay.)

Queensland.

Dentex undulosus Regan ~~Proc 129~~

~~Dentex undulosus Regan, Ann. Natal
Government Mus., vol. 1, 1908, p. 252, pl. 40.
N.E. Bird Island, Natal; Table Bay,
Cape Colony. ¹/₃ Gilchrist and Thompson,
Ann. Durban Mus., vol. 1, pt. 4, 1917, p.
357 (references). ¹/₂ Thompson, Marine
Biolog. Rep. South Africa, no. 4, 1918, p. 83.
¹/₂ Barnard, Ann. South African Mus.,
vol. 21, pt. 2, 1927, p. 719, fig. 26 (outline of
head) (Table and False Bays, Agulhas
Banks, Natal).~~

Dentex rupestris (not Valenciennes) Castelnau,
Mém. Poiss. Afrique Australe, 1861, p. 28
(Agulhas Banks, Algoa Bay, Kalk Bay,
Cape of Good Hope, Table Bay).

Depth $2\frac{1}{2}$ to 3; head $3\frac{1}{5}$ to $3\frac{4}{5}$, profile
prominently gibbose above snout with age.
Eye $3\frac{1}{2}$ to $5\frac{4}{5}$, 1 to 2 in snout, 1 to 2
in interorbital, twice preorbital depth

Holocentrus hasta (de Vis)

829

Leoniphan hasta de Vis, Proc. Linn. Soc.
New South Wales, vol. 9, p. 537, ^{November 29,} 1884,
(type locality, Queensland). — McCulloch
and Whitley, Mem. Queensland Mus.,
vol. 8, pt. 2, p. 139, July 7, 1925 (reference).
— McCulloch, Mem. Austral. Mus.,
vol. 5, pt. 1, p. 135, January 29, 1929
(reference).

Depth barely 3; head $2\frac{3}{4}$. Snout 4
in head; orbit $2\frac{3}{4}$; lower jaw
longer; interorbital 4 in head, with
2 feeble ridges; all bones of head
serrated, preorbital strongly; 2
long spines overlying each other on
angle of preopercle; opercle crenulated
with 2 short, ^{flat} spines; frontal with
radiating grooves.

Scales 40 in lateral line; 10
transversely. Scales strongly ctenoid.

D. XI, I, 12, second spine $\frac{1}{2}$ body
depth; A. III, 7, second spine $\frac{4}{5}$; V
caudal peduncle long, narrow,
tapering.

5599, 5627, 8060, 8366. Busin
Harbor, Barua Island. April 22, 1908.

Length 190 to 205 mm. [5599.] Above
each scale with yellowish green center,
borders brownish, below centers paler
or silvery and borders more
indistinct and yellowish. Side of
body with 4 broad orange longitudinal
bands below lateral line with
interspaces pale yellowish green.
Above lateral line obscure parallel
band. Breast and belly white. Head
olive above; cheeks with bronze
reflections; crimson band down hind
limb of preopercle and front of opercle;

When dry yellowish brown, an obscure longitudinal stripe from occiput to caudal. Large black blotch on first and fourth dorsal membranes above. Length 95 mm. (De Vis.)

Queensland. According to De Vis "the differences between this and L. armatus are, fewer anal rays and a larger spine, a much larger caudal peduncle, shorter snout and opercular spines and a higher body."

can 129

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Dentex coeruleopunctatus (Klunzinger)

Polysteganus coeruleopunctatus Klunzinger,
Verhandel. zool. botan. Gesellsch. Wien,
vol. 20, 1870, p. 763. Koseir, Red Sea.

Dentex (Polysteganus) coeruleopunctatus
Klunzinger, Fische Roth. Meer., 1884, p. 35,
pl. 4, fig. 1.

? Dentex rupestris (not Valenciennes) Fowler,
Proc. Acad. Nat. Sci. Philadelphia, 1925,
p. 239 (Cape Peninsula waters in 100 fathoms).

Depth $2\frac{1}{5}$; head 3, profile rather steeply
convex, width $2\frac{1}{5}$ to $2\frac{1}{2}$. Snout $2\frac{3}{5}$ in
head; eye $3\frac{1}{2}$ to 4, 1 to $1\frac{2}{5}$ in snout,
greater than interorbital; maxillary
reaches $\frac{1}{8}$ in eye, length $4\frac{7}{8}$ in head;
4 canines in front of each jaw; band
of villiform teeth in each jaw, with
outer enlarged row of teeth, though
these not large as canines; interorbital
moderately high; preopercle edge

Holocentrus coruscus Poey

Holocentrum coruscus Poey, Mem. Hist. Nat. Cuba, vol. 2, p. 158, 1860 (type locality, Cuba). — Jordan and Bollman, Proc. U. S. Nat. Mus., vol. , p. 550, 1888 (Green Turtle Cay, Bahamas). —

Holocentrus coruscus Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, p. 851, 1896 (compiled). — B. A. Bean, The Bahama Islands, p. 301, 1905 (Green Turtle Cay). — Langley, Carnegie Inst. Year Books, No. 31, p. 299, 1931-32 (December 9, 1932) (identity of Holocentrus tortugae and Holocentrus punctulatus).

— Jordan, Evermann, Clark, Rep. U. S. Com. Fisher., 1928 (1930), pt. 2, p. 236 (reference).

~~Holocentrus siccifer Cope~~

Holocentrum sicciferum Cope, Trans.
Amer. Philos. Soc., ser. 2, vol. 14, p.
465, 1871 (type locality; New Providence,
Bahamas).

Holocentrus siccifer Jordan and Evermann,
Bull. U. S. Nat. Mus., no. 47, pt. 1, p.
849, 1896 (copied). — Jordan and Thompson,
Bull. Bur. Fisher., vol. 24, p. 236, 1904
(1905) (Tortugas). — B. A. Bean, The
Bahama Islands, p. 301, 1905 (New
Providence). — J. H. Bean, Field Mus.
Pub., vol. 104, zool. ser. 7, no. 1, p. 43,
1905 (Nonsuch Island, Jones Bay,
Cooper's Island, The Beach, Bermuda).
— Fowler, Proc. Acad. Nat. Sci. Philadelphia,
p. 401, 1916 (Torro Point, Canal Zone); p.
150, 1919 (type).

Holocentrus siccifer Fowler, Proc.
Acad. Nat. Sci. Philadelphia, p. 233, fig.
5, 1904 (type).

833

Holocentrus tortugae Jordan and Thompson

Holocentrus tortugae Jordan and Thompson,
Bull. Bur. Fisher., vol. 24, p. 236, fig. 1,
1904 (1905) (type locality, Garden Key,
Tortugas).

Holocentrus puncticulatus Barbour,
Bull. Mus. Comp. Zool., vol. 46, no. 7,
p. 117, pl. 2, September 1905 (type
locality, Flatts Inlet, Bermuda
Islands).

Depth $2\frac{1}{2}$; head $2\frac{3}{4}$, width $1\frac{4}{5}$.
Snout $4\frac{1}{3}$ in head from snout tip;
eye $2\frac{2}{3}$, greatly exceeds snout or
interorbital; maxillary reaches
 $\frac{1}{4}$ in eye, expansion $3\frac{1}{8}$ in eye,
length $2\frac{4}{5}$ in head; interorbital
 $3\frac{1}{5}$, low, depressed concavely in
middle; 2 subequal opercular
spines, slightly shorter than
preopercular spine, which $2\frac{3}{5}$
in eye. Gill rakers + .

Scales 43 in lateral line to
caudal base and 4 more on latter;
4 above, 8 below, 7 predorsal, 5
rows on cheek. Scales with 3 low
short close set basal points; 20
to 23 apical denticles in single

Head $3 \frac{3}{5}$ to origin of lower caudal lobe; depth $6 \frac{1}{3}$; abdominal c
 $2 \frac{2}{5}$ in entire length measured from chin.

Body little compressed, slender, tapers both in front and behind, t
tail more slender. Head little depressed, width $1 \frac{1}{2}$ in its length. Snout
pliable, depressed, length $\frac{1}{2}$ its width. Eye large, orbital horizontal
 $1 \frac{1}{5}$ in interorbital, eye well advanced or center near first $\frac{2}{5}$ in head.
Mouth broad, width $\frac{1}{2}$ of head; deep labial fold at angle of upper jaw,
length but little less than horizontal orbital slit. Teeth in 27 rows above
29 rows below, tricuspid, with median cusp largest. Nostrils large, length
 $\frac{2}{3}$ horizontal orbital diameter, internasal $\frac{1}{3}$ mouth width. Gill-opening
 $\frac{1}{3}$ of eye. Spiracle large, transversely superior behind eye, width $\frac{1}{2}$
pupil.

Skin with small hispid asperities, each as a simple little point, on
tail forming longitudinal rows which narrow to 10 along side of least depth
of caudal peduncle. Fins naked, hispid points extending only over basal
areas broadly; small smooth areas behind dorsal s and paired fins, also in
nostrils, spiracles and gills. First dorsal inserted little nearer snout
tip than origin of upper caudal lobe, spine $1 \frac{2}{3}$ in spine of second dorsal
which slightly greater than interorbital. Second dorsal larger than first

835

row, median 4 largest, circuli
fine, none apical.

D. XI, I, 11, I, third spine 2 in
head, first branched ray $1\frac{2}{3}$; A.
IV, 8, I, fourth spine $1\frac{1}{2}$, first ray
 $1\frac{2}{5}$; caudal $1\frac{1}{4}$, forked; least depth
of caudal peduncle 4; pectoral $1\frac{1}{4}$,
rays I, 13; ventral I, 7, length $1\frac{1}{2}$
in total head length.

Brown, paler to light yellowish
brown below. Each series of scales
on body with row of pale blotches,
large and form longitudinal pale
bands, tapering to caudal peduncle.
Iris brassy or dull orange brown.
Fins all pale brown. Spinous
dorsal with membranes pale to

Orange spots covering front of head,
side under eye, running backward
into nuchal region somewhat. Dorsal
and anal with orange stripes or
bars, body stripe as usual.

whitish, on first 2 median broad
black blotch and also still large
dark blotch over median portion
of others.

Cuba, Bahamas.

U. S. N. M., No. 50825. West of
Loggerhead Key, Tortugas, in coral
heads of 3 feet. November 11, 1902,
Dr. J. C. Thompson. Length 93 mm.

Fossils have been associated with these fishes, as Aulorhynchus de Zigno and Apostasis Kramberger, both without caudal armature, the latter with a serrated opercle.

Analysis of the genera.

a. Hepatinae. Tail armed with very sharp, antrorse, erectile, lanceolate spine, fitting in a groove.

b. Teeth movable, rather long, bristle-like and expanded at tips; dorsal spines 8 or 9.

Ctenochaetus

bb. Teeth immovable, lobate, broad, spines 6 to 10.

c. Ventral with 3 soft rays. Paracanthurus

cc. Ventral with 5 soft rays.

d. Body oblong ovate to moderately ovate; dorsal spines 6 to 10; soft dorsal and anal not elevated in front; caudal usually lunate.

Hepatus.

Holocentrus productus Poey

837

Holocentrum productum Poey, Synop.
Pesc. Cuba, p. 300, 1868 (Type locality,
Matanzas).

Holocentrus vexillarius (not Poey)
Jordan and Evermann, Bull. U. S. Nat.
Mus., no. 47, pt. 1, p. 852, 1896 (part;
on Poey).

~~Holocentrus nigromaculatus Howbray~~

Depth $3\frac{1}{4}$ to $3\frac{3}{5}$; head $2\frac{4}{5}$ to $2\frac{7}{8}$, width $1\frac{7}{8}$ to 2. Snout $4\frac{1}{3}$ to $5\frac{1}{4}$ in head from snout tip; eye $2\frac{1}{2}$ to $2\frac{3}{5}$, greatly exceeds snout or interorbital; maxillary reaches $\frac{2}{5}$ to $\frac{1}{2}$ in eye, expansion 3 in eye; length $2\frac{1}{3}$ to $2\frac{2}{5}$ in head from snout tip; interorbital $3\frac{1}{2}$ to $4\frac{7}{8}$, low, slightly depressed concavely; 2 opercular spines, upper longer or $3\frac{1}{2}$ to $4\frac{1}{2}$ in eye; preopercular spine $2\frac{3}{4}$ to $2\frac{7}{8}$. Gill rakers 6 + 10, of which 5 above and 2 below rudimentary; subequal with gill filaments or $3\frac{1}{5}$ in eye.

Scales 43 in lateral line to caudal base and 3 more on latter; 4 above, 7 below, 8 predorsal, 5 on cheeks behind maxillary. Scales with 8 or 9 close set low basal points;

Case²⁹

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Lethrinus harak (Forskål)

Sciaena harak Forskål, Descript. Animal.,
1775, pp. ⁵⁰ XII, 52. Arabia. Bonnaterre,
Tabl. Ichth., 1788, p. 124 (Red Sea).
Gmelin, Syst. Nat. Linn., vol. 1, 1789, p. 1304
(Arabia). Walbaum, Artedi Pisc., vol.
3, 1792, p. 312 (on Forskål).

Sparus harak Schneider, Syst. Ichth.
Bloch, 1801, p. 276 (copied). Lacépède,
Hist. Nat. Poiss., vol. 4, 1802, pp. 34, 111
(Red Sea).

Lethrinus harak Rüppell, Neue Wirbelth.
Fische, 1835, p. 116, pl. 29, fig. 3 (Oyeda).
Günther, Cat. Fishes Brit. Mus., vol. 1, 1859,
p. 458 (Red Sea). Kner, Reise Novara,
Fische, 1865, p. 81 (Sydney). Klunzinger,
Verhandel. zool. botan. Gesell. Wien, vol.
20, 1870, p. 755 (Koseir, Red Sea).

Day, Fishes of India, pt. 1, 1875, p. 137, pl.
33, fig. 3. Martens, Preuss. Exped. Ost

row of 14 to 16 apical points, median largest; circuli fine, basal, not extended apically.

D. XI, I, 11, I, fourth spine $1\frac{4}{5}$ to 2 in total head length, second branched ray $1\frac{7}{8}$ to 2; A. IV, 8, I, third spine $1\frac{2}{5}$, first branched ray $1\frac{3}{5}$ to $1\frac{2}{3}$; caudal $1\frac{1}{2}$, forked, lobes broad; least depth of caudal peduncle $4\frac{1}{2}$ to $4\frac{3}{5}$; pectoral $1\frac{2}{3}$ to $1\frac{3}{4}$; ventral $1\frac{2}{5}$ to $1\frac{3}{5}$.

Back gray brown, sides and below pale yellowish to whitish. Along back each row of scales longitudinally with pale or white narrow band or line; also below lateral line but less contrasted similar narrow whitish bands. Iris light yellowish to cream white. Fins all pale or whitish. Spinous.

2 examples. As Lethrinus richardsonii.

65906 U.S.N.M. Truk, Carolines.

Albatross Collection 1900. Length 32 to 49 mm. 6 examples; very poor condition.

As Lethrinus richardsonii.

72094 U.S.N.M. Kafa, Okinawa, Riu Kiu. Bureau of Fisheries. Length 210 mm.

52799 A.N.S.P. Orion, Bataan, Philippines. May 9, 1923. Rev. Joseph Clemens. Length 153 mm.

dorsal with first 3 membranes
medially with large blackish
blotch.

^{Bermuda.}
Cuba, differs from Holocentrus
vexillarius Poey in its more slender
body, less contrasted or inconspicuous
pale longitudinal bands, besides
smaller scales.

Evermann and Seale say "known by its slender body, long snout, and peculiar conical lateral teeth" this specimen agrees in color pattern with my other materials and in no way is like Bleeker's figures. It is doubtless slender due to wrapping or packing tightly in shipment.

56181 U.S.N.M. Bacon, Bureau of Fisheries (no. 3206). Length 123 mm.
As Lethrinus richardsonii.

56246 U.S.N.M. Bacon, Bureau of Fisheries (no. 3207). Length 121 mm.
As Lethrinus richardsonii.

5802 U.S.N.M. Zambounga. Dr. E. A. Mearns. Length 198 to 284 mm. 3 examples.

65903 U.S.N.M. Suva, Fiji. Bureau of Fisheries (no. 05867). Length 126 mm.

65905 U.S.N.M. Tonga Island. Bureau of Fisheries (no. 05870). Length 52 to 123 mm.

841
U. S. N. M., no. 37428. Cuba.
Prof. F. Poey. Length 66? mm, caudal
ends broken.

U. S. N. M., no. 65290. Harrington
Sound, Bermuda. October 4, 1906.
Louis Mowbray. Length 96 mm. As
"Holocentrus nigromaculatus", a
name which I have been unable
so far to locate.

34801 U.S.N.M. Tahiti. Dr. W.H. Jones. Tahiti. Length 233 mm.
As Lethrinus miniatus.

34815 U.S.N.M. Tempe, Marquesas. Dr. W.H. Jones. Length 184 mm. As Lethrinus miniatus.

55629 U.S.N.M. Jolo. Dr. E.A. Mearns. 1904. Length 233 mm.

56007 U.S.N.M. Luzon. Bureau of Fisheries (No. 3265). Length 165 mm. Last 2 or 3 teeth more or less molar.

56171 U.S.N.M. Bacon. Bureau of Fisheries (No. 3205). Length 107 mm. As Lethrinus richardsonii

56137 U.S.N.M. Bacon. Bureau of Fisheries (No. 3208). Length 122 mm. As Lethrinus richardsonii.

56178 U.S.N.M. San Fabian. Bureau of Fisheries (No. 3826). Length 138 mm. As Lethrinus variegatus. Although

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Holocentrus furcatus Günther

Holocentrum furcatum Günther, Cat. Fish. Brit. Mus., vol. 1, p. 29, 1859 (type locality, South Sea); Journ. Mus. Godeffroy, vol. 4, p. 99, pl. 64, fig. A, 1875 (south west part of South Sea).

Holocentrus furcatus Fowler, Mem. Bishop Mus., vol. 10, p. 102, 1928 (Honolulu; type of Holocentrus ensifer). — Schmidt, Trans. Pac. Comm. Acad. Sci. U. S. S. R., vol. 1, p. 28, 1930 (Yaeyama Island, Riu Kiu). — Fowler, Mem. Bishop Mus., vol. 11, no. 5, p. 322, 1931 (Honolulu).

Holocentrus ensifer Jordan and Evermann, Bull. U. S. Fish Comm., vol. 22, p. 176, 1902 (1903) (type locality, Honolulu; Kailua); vol. 23, pt. 1, p. 165, pls. 2 and 28, 1903 (1905) (types). — Fowler, Copeia, no. 112, p. 82, November 20, 1922 (Hawaiian Islands). Holocentrus ensifer Fowler, Proc. Acad. Nat. Sci. Philadelphia, p. 235, 1904 (paratype of Holocentrus ensifer).

(843)

Depth $2\frac{2}{3}$ to $2\frac{4}{5}$; head $2\frac{1}{2}$ to $2\frac{2}{3}$, width $2\frac{1}{8}$ to $2\frac{1}{4}$. Snout 4 to $4\frac{3}{5}$ in head from snout tip; eye $2\frac{7}{8}$ to $3\frac{3}{5}$, greatly exceeds snout or interorbital; maxillary reaches $\frac{2}{5}$ to $\frac{1}{2}$ in eye, expansion 2 to $2\frac{1}{2}$ in eye, length $2\frac{2}{3}$ to $2\frac{7}{8}$ in head from snout tip; interorbital $4\frac{2}{3}$ to $5\frac{1}{3}$, low, little concave medially; 2 opercular spines, upper long and greatly larger, $1\frac{2}{3}$ to $2\frac{4}{5}$ in eye; preopercular spine subequal with opercular or $1\frac{1}{4}$ to $2\frac{2}{5}$ in eye. Gill rakers 6 + 14, lanceolate, $1\frac{1}{2}$ in gill filaments, which 3 in eye.

Scales 44 to 48 in lateral line to caudal base and 4 or 5 more on latter; 4 above, 8 below, 8 predorsal, 5 rows on cheeks. Scales with 3 low, short, close set,

8845. Maculabo Island. June 14, 1909.
Length 152 mm.

6591. Maricaban near Sepoc Point.
July 21, 1908. Length 183 mm.

6253 to 6255, 6277. Medio Island, Galera
Bay, Mindoro. June 9, 1908. Length 165 to 180 mm.

612. Murcielago Bay. August 9, 1907.
Length 82 mm.

20800. Luto River, Luzon, tide-water.
June 18, 1909. Length 65 mm. Pale form,
6608 and 10404. North west of Verde Island.
July 22, 1908. Length 125 to 156 mm.

1269 and 7982. Pagapas Bay. February 20,
1909. Length 128 to 157 mm.

7332. Pandan Island near Sablayan Bay,
Mindoro. December 12, 1908. Length 151 mm.

5765 and 5766. Port Capunpungan,
Mindanao. May 10, 1908. Length 140 to 155 mm.

18894. Port Maricaban. July 12, 1908. Length 135 mm.

4777. Port Maricaban. July 21, 1908.
Length 150 mm.

844

basal points; apical denticles
27 or 28 in row, median largest;
circuli very fine, basal, close set.

D. XI, I, 11, I to I, 13, I, third
spine $2\frac{1}{4}$ to $2\frac{1}{3}$ in total head,
second ray $1\frac{7}{8}$ to 2; A. IV, 9, I or
IV, 10, I, third spine $1\frac{2}{3}$ to $1\frac{7}{8}$,
first branched ray $1\frac{7}{8}$ to 2;
caudal $1\frac{1}{2}$ to $1\frac{3}{5}$, forked; least
depth of caudal peduncle $4\frac{1}{3}$ to
 $4\frac{2}{3}$; pectoral $1\frac{2}{3}$ to $1\frac{4}{5}$; ventral
 $1\frac{3}{5}$ to $1\frac{4}{5}$.

Brown, little paler below.

Along each row of body scales, at
junctures, narrow pale yellowish
to whitish longitudinal line,
converging at caudal peduncle.
Iris yellowish white. Fins all
pale yellowish brown. First
membrane of spinous dorsal

8379. Calangaman Island. March 16, 1909.
Length 180 mm.

1209. Capulaan Bay, Pagbilao Island.
February 24, 1909. Length 120 mm.

505. Casagoran, Malhon Island. July
27, 1909. Length 85 mm.

7747 and 7753. Caxisigan Island, Balabac.
January 2, 1909. Length 170 mm.

21464. Danawan and Si Anil Islands.
September 27, 1909. Length 78 mm.

7505. Endeavor Strait. December 22, 1908.
Length 167 mm.

7557. Endeavor Strait. December 23, 1908.
Length 167 mm.

18859. Inamuran Bay. August 8, 1909.
Length 67 mm.

8424. Libig, Lubang Island. July 14, 1908.
Length 140 mm.

5970. Little Santa Cruz Island. May 26, 1908.
Length 168 mm.

medially with dusky blotch less,
less distinct one following on
second and third membranes.

Riu Kiu, Hawaiian Islands.

A well marked species. Garrett's
figure, reproduced as Holocentrum
furcatum by Günther, shows the
caudal with very slender lobes.

I have already suggested that
Günther described the light or
pale longitudinal lines not shown
on this figure.

843
8121. Alimango Bay, Burias Island.
March 5, 1909. Length 135 mm.

8935. Atulayan, Lagonoy Gulf. June 18,
1909. Length 155 mm.

4837. Biri Channel. June 1, 1909.
Length 112 mm.

1054 and 7469. Bolalo Bay. December 21,
1908. Length 74 to 153 mm.

8340. Bura Bay, Talajik Island.
March 15, 1909. Length 164 mm.

998. Bubuan Island. February 14, 1908.
Length 126 mm.

547 and 548. Bugsuk. January 5, 1909.
Length 122 to 137 mm.

5675. Busin Harbor, Burias Island.
April 23, 1908. Length 150 mm.

1250 and 1251. Candaraman Island.
January 4, 1909. Length 97 to 143 mm.

9144 and 1276. Cabaigan Island, Hinangyan
Island. July 30, 1909. Length 128 to 175 mm.

846
U. S. N. M., No. 58637. Honolulu.
Bureau of Fisheries (03448). Length
238 mm. Type of Holocentrus ensifer.

U. S. N. M., No. 55229. Honolulu.
Bureau of Fisheries. Length 155 mm.

U. S. N. M., No. 55293. Honolulu.
Albatross Collection. March 27, 1902.
Length 132 to 143 mm. Three examples.

Zanzibar, Mauritius, Reunion,
India, East Indies, Philippines,
Japan, Queensland, Melanesia, Micronesia,
Polynesia, Hawaii. The form usually
pale or but slightly contrasted in color,
usually known as Zanclus canescens,
we unite with the present species.
The few examples we have seen are
like Bleeker's and range from 65 to 70
mm. in length. They differ in no way
save for their paler or bleached
coloration.

847

Holocentrus sammara (Forskål)

Sciaena sammara Forskål, Descript.
Animal., pp. XII, 48, 1775 (type locality,
Gedda, Red Sea). — Bonnaterre,
Tabl. Ichth., p. 120, 1788 (Red Sea).
— Gmelin, Syst. Nat. Linn., vol. 1,
p. 130, 1789 (Arabia). — Walbaum,
Artedi Pisc., vol. 3, p. 316, 1792
(copied). ~~Lacépède, Hist. Nat.
Poiss., vol. 4, pp. 309, 316, 1802~~

Perca sammara Schneider, Syst.
Ichth. Bloch, p. 89, 1801 (copied).

Sciaena sammara Lacépède, Hist. Nat.
Poiss., vol. 4, pp. 309, 316, 1802 (Arabia).

mottlings on membranes. Caudal dusky, with pale purplish shades, with 4 transverse rows of dark spots on membranes in crotch and tips of rays pinkish. Pectorals very pale straw-yellow. Ventrals dusky.

848

Holocentrus sammara (Forskål)

Uclaena sammara Forskål, Descript.
Animal., pp. 13, 48, 1775 (type locality,
Sjeddah, Red Sea).

Labrus sammara Lacépède, Hist. Nat. Poiss.,
vol. 3, p. 430, 1802.

Pepaea sammara Schneider, Syst. Ichth.
(Bloch), p. 89, 1801 (copied).

Holocentrus samara Rüppell, Atlas Reise
nördl. Afrika, Fische, p. 85, pl. 22, fig. 3,
1828 (Red Sea).

Holocentrus sammara Kittlitz, Denkw.
Reis. Mikrones., vol. 2, p. 22, fig., 1858
(Ulea). — Bleeker, Ned. Tijds. Dierk.,
vol. 1, p. 268, 1863 (Sitapupu, Timor);
vol. 2, p. 142, 1865 (Buru). — Martens,
Verh. Zool. Bot. Ges. Wien, vol. 16, p. 378,
1866 (Red Sea). — Seale, Ocean. Pap.
Bishop Mus., vol. 4, no. 1, p. 24, 1906
(Tahiti, Shortland, Raiatea, Rarotonga,
Mukuhiva). — Jordan and Seale,

Bull. Bur. Fisher., vol. 25, p. 227, 1905
(1906) (Apia). — Jordan and Snyder,
Proc. U. S. Nat. Mus., vol. 29, p. 353,
1906 (Tahiti); Bull. Bur. Fisher.,
vol. 26, p. 208, 1906 (1907) (Honolulu).

— Jordan and Richardson, Bull. Bur.
Fisher., vol. 27, p. 248, 1907 (1908)
(Cagayancillo). — Snyder, Proc. U. S.

Nat. Mus., vol. 42, p. 410, 1912
(Tanegashima), p. 496 (Okinawa).

— Kendall and Goldsbrough, Mem.
Mus. Comp. Zool., vol. 26, p. 265, 1911
(Taritari, Makemo, Fakarava, Siwa).

— Kendall and Radcliffe, Mem. Mus.
Comp. Zool., vol. 35, p. 95, 1911 (Mangareva).

→ — Jordan, Tanaka, Snyder, Journ.

College Sci. Tokyo, vol. 33, p. 116, 1913

— Izuka and Matsuura, Cat. Zool. Spec. Tokyo Mus., Vert., p. 162, 1920 (Yagajima).

(reference) — Fowler and Silvester,
Marine Pap. Carnegie Inst., p. 117, 1922

(Pago Pago). — Fowler, Bull. Bishop
Mus., no. 22, p. 6, 1925 (Guam), p. 24
(Honolulu), p. 32 (Samoa). — Fowler

and Ball, Bull. Bishop Mus., no. 26,
p. 9, 1925 (French Frigates Shoal; Wake
Island). — Fowler, Bull. Bishop Mus.,

no. 38, p. 8, 1927 (Fanning Islands);

Proc. Acad. Nat. Sci., Philadelphia,
vol. 79, p. 266, 1927 (Philippines); Mem.
Bishop Mus., vol. 10, p. 104, 1928
(Samoa, Fiji, Tahiti, Apia, Honolulu,
Laysan, Suva, Mangareva, Fakarava,
Manotus, French Frigates Shoal,
Wake Island, Raiatea, Rarotonga,
Mukuhiva, Shortland, Pelew, Society,
Makemo, Strong, Kingman Islands,
type of Holocentrus fuscostriatus);
vol. 11, no. 5, p. 322 (Honolulu).

Holocentrum sammara Cuvier, Hist. Nat.
Pois., vol. 3, p. 216, 1829 ("mer des Indes").
Journ. Indian Arch., vol. 2, p. (633) 636, 1848 (Bima);
— Bleeker, Verh. Batav. Genoot. (Percoid.),
vol. 22, p. 53, 1849 (Bima, Sumbawa);
Nat. Tijds. Ned. Indië, vol. 3, p. 235, 1852
(Amboina), p. (546) 555 (Amboina;
Sumbawa), p. 690 (Wahai); vol. 4, p. 92,
1853 (Amboina), p. 596 (Halmaheira);
vol. 5, pp. 319, 320, 1853 (Amboina);
vol. 6, p. 89, 1854 (Banda, heira), p. 313
(Larantuba, Flores), pp. 457, 459
(Amboina); vol. 8, p. 392, 1855 (Amboina),
p. 436 (Manado), p. 445 (Kobor Keeling);

vol. 10, p. 359, 1856 (Ternate); vol. 11, p. 81, 1856 (Malang, Java), p. 385 (Kayeli, Buru); vol. 12, p. 192, 1856 (Ternate); vol. 13, p. 371, 1857 (Sangi), p. 383 (Batjan); vol. 15, p. 198, 1858 (Goram); vol. 16, p. 28, 1858 (Amboina), p. 209 (Batjan); Act. Soc. Sci. Ind. Néerl., vol. 1, no. 3, p. 3, 1856 (Manado); vol. 1, no. 5, p. 4, 1856 (Amboina); vol. 2, no. 7, p. 3, 1857 (Amboina); vol. 3, no. 4, p. 2, 1857-58 (Manado). — Günther, Cat. Fish. Brit. Mus., vol. 1, p. 46, 1859 (Amboin, Red Sea, Cape Seas, India). — Bleeker, Nat. Tijds. Ned. Indië, vol. 22, p. 111, 1860 (Buru); Ned. Tijds. Dierk., vol. 1, p. 240, 1863 (Albi), p. 254 (Wahai, Ceram). — Schmeltz, Cat. Mus. Godeffroy, no. 2, p. 6, 1865 (Samoa). — Kner, Reise Novara, Fische, p. 9, 1865 (Tahiti). — Schmeltz, Cat. Mus. Godeffroy, no. 3, p. 6, 1866 (Samoa); no. 4, p. 12, 1869 (Samoa, Viti). — Klunzinger, Verh. Zool. Bot. Ges. Wien, vol. 26, p. 720, 1870 (Red Sea). — Bleeker, Rés. Poiss. Madagascar, Pollen et Van Dam, pt. 4, p. 86, 1874 (reference); Ned. Tijds.

Quirk., vol. 4, p. 213, 1874 (Java, Cocos, Sumatra, Sumbawa, Flores, Timor, Celebes, Sangi, Ternate, Batjan, Obi, Buru, Amboina, Ceram, Banda). — Günther, Journ. Mus. Godeffroy, vol. 4, p. 100, 1875 (Society Islands; Paumotu). — Day, Fishes of India, pt. ., p. 173, 1876 (part). — Schmeltz, Cat. Mus. Godeffroy, no. 7, p. 36, 1879 (South Seas). — Macleay, Proc. Linn. Soc. New South Wales, vol. 7, p. 352, 1882 (New Guinea); vol. 8, p. 365, 1883 (Hood Bay, New Guinea). — Peters, Trans. Roy. Soc. Arts Sci. Mauritius, new ser., vol. 11, p. 52, 1883 (Mauritius). — Klunzinger, Fische Roth. Meer^{vol. 1}, p. 79, pl. 3, fig. 7, 1884. — Pöhl, Cat. Mus. Godeffroy, no. 10, p. 30, 1884 (South Seas). — Meyer, An. Soc. Espan. Hist. Nat. Madrid, vol. 14, p. 23, 1885 (Manado, Celebes). — Sauvage, Hist. Nat. Madagascar ^(Red Sea, Mauritius, Madagascar, Celebes, Bouru, Waigiu, Borobora) Poiss., p. 31, 1891. — Elera, Cat. Fauna Filipinas, vol. 1, p. 456, 1895 (Samar; Cebu). — Boulenger, Ann. Mag. Nat. Hist., ser. 6, vol. 20, p. 372, 1897 (Rottuma). — Ishikawa and Matsuura, Prelim. Cat. Fish. Mus. Tokyo, p. 58, 1897. — Pellegrin, Bull.

Marguerat, Cochin China, East Indies

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 (Guam). — Steindachner, Denks. Akad.
Wiss. Wien, vol. 70, p. 492, 1901 (Samoa). —
Borsieri, Ann. Mus. Civico Stor. Nat.
Genova, ser. 3, vol. 1, p. 199, 1904 (Suakin,
 Red Sea). — Steindachner, Sitzs. Ber.
Akad. Wiss. Wien, vol. 115, pt. 1, p. 1375,
 1906 (Upolu). — Bedot, Rev. Suisse Zool.,
 vol. 17, p. 169, 1909 (Amboina). — Pellegrin,
Bull. Mus. Hist. Nat. Paris, vol. 18, p. 206,
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Beaufort, Bijd. Dierk. Amsterdam, vol. 19,
 p. 110, 1913 (Saonek, Waigiu). — Barnard,
Ann. South Afric. Mus., vol. 21, pt. 1, p.
 365, June 1925 (compiled). — Weber and
Beaufort, Fishes Indo Austral. Archip.,
 vol. 5, p. 233, 1929 (Kias, Flores, Lamakera,
 Rotti, Biaru, Talaut, Banda, Misol,
 Waigiu). — Giltay, Mém. ^{Roy.} Mus. Hist. Nat.
Belge, vol. 5, pt. 3, p. 50, April 30, 1933
 (Banda Neira; Goenoeng Api).

Flammeo sammara Seale, Ocean. Pap.
Bishop Mus., vol. 1, no. 5, p. 18, 1902
 (Honolulu). — Jenkins, Bull. U. S.
Fish Comm., vol. 22, p. 444, 1902 (1903)
 (Honolulu). — Snyder, Bull. U. S. Fish
Comm., vol. 22, p. 523, 1902 (1904)
 (Honolulu; Laysan). — Jordan and
Evermann, Bull. U. S. Fish Comm., vol.
 23, pt. 1, p. 155, fig. 56, 1903 (1905)
 (Honolulu; Makemo; Samoa). — Fowler,
Copeia, no. 58, p. 63, June 18, 1918
 (Philippines); Copeia, no. 122, p. 82,
 November 20, 1922 (Hawaii).

Labrus angulosus Lacépède, Hist. nat. Poiss.,
 vol. 3, pp. 430, pl. 22, fig. 1, 1802 (~~the~~ type,
 locality, "le ⁴⁷⁸ grand golfe de l'Inde"
 [Mauritius] on Commerçon).

Holocentrum christianum (Ehrenberg)
Cuvier, Hist. nat. Poiss., vol. 3, p. 219, 1829
 (type locality, Koseir, Red Sea).

Holocentrum laevis Günther, Cat. Fish. Brit.
Mus., vol. 1, p. 47, 1859 (type locality;
 Louisade Archipelago; Gadalcantar,
^{Playfair, Proc. Zool. Soc. London, 1867, p. 855 (Vergil Heller).}
 Solomons; Limboyna). — Bleeker,
~~Nourmahur, Goodeffray, Rés. Poiss.~~
 Madagascar, Pollen (et Van Dam), pt. 4,

13512. Yomomo Island. December ¹¹⁶²
3, 1909. Length 206 mm.
7515. Hong Kong market. August 13, 1908.
Length 193 mm.

p. 86, 1874 (reference). — Günther, Journ. Mus. Godeffroy, vol. 4, p. 101, pl. 65, fig. 3, 1875 (types; Samoa). — Peters, Monatsb. Akad. Wiss. Berlin, p. 835, 1876 (1877) (New Ireland). — Steindachner,

— Schmeltz, Cat. Mus. Godeffroy, no. 7, p. 36, 1879 (South Sea Islands). — Pöhl, Cat. Mus. Godeffroy, no. 10, p. 30, 1884 (Samoa).

(Vayo Vayo). — Towler, Bull. Bishop Mus., No. 22, p. 32, 1925 (Samoa); New Bishop Mus., vol. 10, p. 101, fig. 20, 1928 (Fate, Tahiti, Apia, Society Islands, Kingmsills, type of Flammeo achronopterus), vol. 11, no. 5, p. 322, 1931 (reference).

Holocentrum sammara var. laeve Weber and Beaufort, Fishes Indo Austral. Archip., vol. 5, p. 233, 1929 (note).

Holocentrum tahiticum Kner, Vitz. Ber. Akad. Wiss. Wien, vol. 29, p. 29, 1864 (type locality, Tahiti); Reise Novara, Fische, vol. 1, pt. 5, p. 9, fig. 2, 1865 (type); Vitz. Ber. Akad. Wiss. Wien, vol. 57, pt. 1, p. 296, 1868 (Kandavu, Fiji). — Schmeltz, Cat. Mus. Godeffroy, no. 4, p. 12, 1869 (Samoa,

p. 86, 1874 (reference). — Günther, Journ. Mus. Godeffroy, vol. 4, p. 101, pl. 65, fig. 3, 1875 (types; Samoa). — Peters, Monatsb. Akad. Wiss. Berlin, p. 835, 1876 (1877) (New Ireland). — Steindachner, Sitzb. Ber. Akad. Wiss. Wien, vol. 115, pt. 1, p. 1375, 1906 (Upolu).

Holocentrus laevis Jordan and Seale, Bull. Bur. Fisher., vol. 25, p. 226, 1905 (1906) (Pago Pago). — Fowler, Bull. Bishop Mus., No. 22, p. 32, 1925 (Samoa); Mem. Bishop Mus., vol. 10, p. 101, fig. 20, 1928 (Fate, Tahiti, Apia, Society Islands, Kingmills, type of Flammeo achromopterus), vol. 11, no. 5, p. 322, 1931 (reference).

Holocentrum sammara var. laeve Weber and Beaufort, Fisches Indo Austral. Archip., vol. 5, p. 233, 1929 (note).

Holocentrum tahiticum Kner, Sitzb. Ber. Akad. Wiss. Wien, vol. 29, p. 29, 1864 (type locality, Tahiti); Reise Novara, Fische, vol. 1, pt. 5, p. 9, fig. 2, 1865 (type); Sitzb. Ber. Akad. Wiss. Wien, vol. 57, pt. 1, p. 296, 1868 (Kandavu, Fiji). — Schmeltz, Cat. Mus. Godeffroy, no. 4, p. 12, 1869 (Samoa).

~~9622 to 9624, 11096, 11100, 16368~~ Agogo Point, Catanduan
 Island. Length 155 to 220 mm. ~~1624, 1625, 1626~~
 11096, preopercle 0-1; 16368, canines $\frac{1-1}{0-0}$
~~5178~~ Alibigabuan Island, Pangasinan Gulf, Luzon
 Length 117 mm, March 6, 1907. (Canines $\frac{1-1}{0-0}$)

Rhinatsb. Akas
 (1877) (New Dr
 Vitz. Ber. L.
 1375, 1906 (
 Holocentrus lae
 Bur. Fisher, n
 (Pago Pago).

A 1333. Tomahu Island, north
end of Bouru Island. December 12, 1909.
Length 310 mm.

A 1468. Kait Point, Libani Bay, Celebes.
December 29, 1909. Length 277 mm. Head
slaty, with reddish; side below eye
streaked with olive or slaty, forming
more or less of reticulation. Soft vertical
fins bright scarlet in membranes,
rays more or less pale; dorsal mottled
with white anteriorly and up to middle
of soft fin; anal with some mottling;
caudal and paired fins without spots.

22667. Labuandata Bay, Gulf of
Bonu, Celebes. December 18, 1909. Length 120 mm.

Viti, Tonga); no. 7, p. 36, 1879 (South Seas) ⁸⁵⁶
~~Holocentrus platyrhinus Klunzinger~~

Holocentrum platyrhinum Klunzinger,
Verh. Zool. Bot. Ges. Wien, vol. 20, p. 725,
1870 (type locality, Red Sea).

857

~~Viti, Tonga~~; ~~Ho. 7, p. 36, 1879 (South Seas)~~.

Holocentrum goldiei Macleay, Proc. Linn. Soc. New South Wales, vol. 7, p. 352, 1882 (type locality, New Guinea).

Rhynchichthys novae-britanniae De Vis, Proc. Linn. Soc. New South Wales, vol. 8, p. 447, 1884 (type locality, New Britain).

Holocentrus fuscotriatus Seale, Occas. Pap. Bishop Mus., vol. 1, no. 3, p. 69, 1900 (1901) (type locality, Guam); vol. 1, no. 5, p. 12, 1902 (Honolulu).

Flammeo scythrops Jordan and Evermann, Bull. U. S. Fish Comm., vol. 22, p. 74, 1902 (1903) (type locality, Honolulu); vol. 23, pt. 1, p. 137, fig. 57, 1903 (1905) (type; Honolulu; Hilo).

Holocentrus scythrops Fowler, Bull. Bishop Mus., no. 38, p. 8, 1927 (Honolulu); Mem. Bishop Mus., vol. 10, p. 104, 1928 (Honolulu; type).

Flammeo achromopterus Fowler, Proc. Acad. Nat. Sci. Philadelphia, p. 236, fig. 6, 1904 (type locality, Samoa).

crossed by 4 to 6 slaty somewhat undulating oblique bars on each, though spines not marked by bars; soft dorsal with narrow pale edge or tip to membranes after fourth and fifth or somewhat anterior on fin, which bright scarlet and region basally about half diameter of eye in extent with slaty bars. Anal like dorsal, bars on membranes formed as cloudings and as few scattered spots at base of soft fin; caudal bright scarlet; pectoral rays scarlet, membranes nearly clear; ventral scarlet, with slaty shades on inner base.

Depth 3 to $3\frac{1}{3}$; head $2\frac{3}{4}$ to $2\frac{4}{5}$, width 2 to $2\frac{1}{10}$. Snout $3\frac{1}{2}$ to $4\frac{2}{5}$ in head from snout tip; eye 2 to $2\frac{1}{2}$, greatly exceeds snout in young to subequal with age, greater than interorbital; maxillary reaches $\frac{1}{4}$ to $\frac{1}{2}$ in eye, expansion $2\frac{1}{2}$ to $2\frac{4}{5}$ in eye, length $2\frac{2}{5}$ to $2\frac{1}{2}$ in head from snout tip; interorbital $4\frac{1}{8}$ to $4\frac{1}{3}$, low, slightly concave medially; 2 opercular spines, subequal or upper slightly larger and longer, $2\frac{3}{5}$ to $4\frac{1}{2}$ in eye; preopercular spine broad, short, $2\frac{7}{8}$ to 3 in eye. Gill rakers 6 + 9, of which 4 above and 2 below rudiments, $\frac{1}{2}$ of eye.

Scales 38 to 40 in lateral line to caudal base and 3 or 4 more on latter; 4 above, 7 or 8 below, 7 predorsal, 4 or 5 rows on cheeks.

Meas. Wiss. Berlin, vol. 1, 1877, p. 12
(Red Sea).

Lethrinus scoparius Gilchrist and Thompson,
Ann. South African Mus., vol. 6, 1908-11,
p. 168, Natal; Ann. Durban Mus., vol. 1,
pt. 4, 1917, p. 360 (reference). Fowler,
Proc. Acad. Nat. Sci. Philadelphia, 1925,
p. 241 (Delagoa Bay).

Lethrinus chrysotomus (not Richardson)
Gilchrist and Thompson, Ann. South
African Mus., vol. 13, ^{pt. 3} 1914, p. 69 (Natal);
Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 360
(reference).

Lethrinus cutambi Seale, Philippine Journ.
Sci., vol. 4, no. 6, November 1907, p. 514, pl.
10. Vitenki Island, Zolo. Heine and
Muntalban, Philippine Journ. Sci., vol. 33,
no. 4, 1927, p. 407 (type).

Lethrinus mahsenoides (not Valenciennes)
Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1925,
p. 242 (Delagoa Bay).

Scales with 2 or 3 short, low, close set medial basal points; row of 56 to 58 apical points, medial largest; circuli fine, close set, basal, not extending apically.

D. XI, I, 11, I or XI, I, 12, I, third spine $1\frac{5}{6}$ to $2\frac{1}{4}$ in total head length, second branched ray $1\frac{9}{10}$ to $2\frac{1}{5}$; A. IV, 8, I, third spine $1\frac{3}{4}$ to $1\frac{1}{2}$, first ray $1\frac{3}{4}$ to $2\frac{1}{2}$; caudal $1\frac{1}{3}$? to $1\frac{3}{5}$, forked; least depth of caudal peduncle $4\frac{1}{5}$ to $4\frac{2}{5}$; pectoral $1\frac{3}{4}$ to $1\frac{7}{8}$; ventral $1\frac{2}{3}$ to $1\frac{4}{5}$.

Preserved examples often pale brown, more or less whitish below. Each row of scales longitudinally with median narrow dark brown band. Each scale of cheek with small basal dark brown spot.

Fishes, vol. 2, 1887, p. 38. ¹/_m Thurston,

Pearl Fisher, Gulf of Manar, 1870, p.

92 (Pamban). — Pearson, Ceylon Administr. Rep., 1912-13, p. E9; 1914, p. E6; 1915-18, pp. F9, F10, F11, F12, F15, F18, V

Lethrinus albovittatus Valenciennes,

Hist. nat. Poiss., vol. 6, 1830, p. 314.

Bonin Islands.

Pentapodus nebulus Cantor, Journ.

Asiatic Soc. Bengal, vol. 18, pt. 2, 1849
(1850), p. 1031. Sea of Pinang.

Pentapodus nebulus Günther, Cat. Fishes
Brit. Mus., vol. 1, 1857, p. 382 (copied).

Lethrinus nebulosus var. chumchum

Klunzinger, Verhandl. zool. botan. Gesell.
Wien, vol. 20, 1870, p. 754. Red Sea.

Lethrinus laticaudis Alleyne and Macleay,

Proc. Linn. Soc. New South Wales, vol. 1,
1875-76, p. 276, pl. 8, fig. 2. Percy Islands,
Queensland.

Lethrinus nebulosus var. ochrolineata

Kossman and Rüppell, Zool. Ergebn. Kais.

Iris pale or light brown. Fins all light brown generally. Spinous dorsal with large median ^{dark} blotch over first 3 membranes and then middle portion of each membrane paler; upper margin of fin and basal part of fin more or less white above dark median blotch, though less contrasted posteriorly. Front edge of soft dorsal, middle of each scale lobe and front of soft anal, also inclusive of last anal spine, blackish.

Red Sea, Mauritius, Madagascar, East Indies, Philippines, Riu Kiu, Melanesia, Micronesia, Polynesia, Hawaii.

less irregular or variable pale longitudinal streaks, or they may even form obscure rows across the dark scales. All the soft vertical fins show some trace of dark cross bars, at least the soft dorsal and caudal. It differs from the young of Lethrinus ballopterus, chiefly in the slightly lower body and body markings.

Lethrinus cutambi Seale is based on an example 210 mm. though Herre and Montalban give but 159 mm. They also describe "the blackish blotch on second bar between lateral line and middle of pectoral is barely perceptible."

10007 to 10009. Batuanan Island.
June 13, 1909. Length 168 to 185 mm.
[2123.]

One example. Bolinao Bay, west
coast of Luzon. May 10, 1909. Length
168 mm. [1540.]

Six examples. Calangaman Island,
between Leyte and Cebu. March 16,
1909. Length 113 to 140 mm.

Three examples. Makese Island,
Palawan. April 5, 1909. Length
70 to 118 mm.

6740. Port Matalvi, Luzon.
November 2, 1908. Length 163 mm.

One example. Simaluc, Bisibisi
Island. September 23, 1909.
Length 48 mm.

17311, 17312. Sipadan Island.
September 28, 1909. Length 153 to
172 mm.

23412. Yane Road, Gillolo
Island. December 1, 1909. Length 73 mm.

8400, 8402, 8403, 8405 to 8407.

Hokuho, No Wan, Formosa. January
29, 1910. Length 68 to 87 mm.

18420. No Wan. January 28, 1910.
Length 73 mm.

Four examples. Buha Buha
Island, Gulf of Tomini, Celebes.
November 20, 1909. Length 67 to 80
mm.

22721 to 22723. Talisse Island.
November 9, 1909. Length 108 to 150
mm.

Bright yellow stripe across snout
from eye to eye, washed across iris.
Dash of black on cheek under eye
about pupil width. Black blotch
size of pupil at upper angle of

gill-opening.
November 17, 1909. Length 68 mm.
23504. Una Una Road, Binua Unang, Gulf of Tanna, Celebes. 11
1 example. Tana & Keke Island, Flores Sea.

December 21, 1909. Length 41 mm.

23796 and 23798. Makyan Island.

November 29, 1909. Length 73 or 74 mm.

3 examples.

23627 and 23799. Powati Harbor,

Makyan Island. November 28, 1909.

Length 70 to 84 mm.

23531. Tidore Island, south of Ternate.

November 25, 1909. Length 77 mm.

U. S. N. M., no. 34807. Apia, Samoa.
Dr. W. H. Jones. Length 170 mm.

U. S. N. M., no. 45064. Tahiti.
British Museum. Length 69 mm.

U. S. N. M., no. 50633. Honolulu.
Bureau of Fisheries. Length 235 mm.
Type of Flammeo scythrops.

U. S. N. M., no. 50634. Hawaiian Islands.
U. S. Fish Comm. Length 218? mm. As
Flammeo scythrops.

U. S. N. M., no. 51134. Hawaii.
Bureau of Fisheries (03374). Length
273 mm.

U. S. N. M., no. 52197. Samoa.
Bureau of Fisheries. Length 71 to 123 mm.
Two examples. As Holocentrus laevis.

U. S. N. M., no. 52400. Apia, Samoa.
Bureau of Fisheries. Length 38 to 189 mm.
Ten examples.

Lethrinus centurio Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 304. ¹/_{2m} Seichellen. ¹/_{2m} Peters, Archiv naturgesch., 1855, p. 243 (Mozambique). ¹/_{2m} Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 203, pl. 20, fig. 1, pl. 24, fig. 3 (type). ¹/_{2m} Pellegrin, Bull. Mus. Hist. Nat. Paris, vol. 13, 1907, p. 203 (Nankarano, Madagascar); Bull. Soc. Zool. France, vol. 39, 1914, p. 229 (Diego Suarez, Mahamba, Fort Dauphin, Madagascar).

Lethrinus esculentus Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, pl. 158.

Lethrinus karua Valenciennes, op. cit., vol. 6, 1830, p. 311 (on Karua Russell, Fishes of Coromandel, vol. 1, 1803, p. 71, pl. 87, Vijayapatnam). ¹/_{2m} Day, Proc. Zool. Soc. London, 1867, p. 558 (Madras); Fishes of India, pt. 1, 1875, p. 135, pl. 33, fig. 2 (Madras); Fauna British India,

U. S. N. M., no. 55126. Laysan.
Albatross Collection. Length 193 mm.

U. S. N. M., no. 55427. Honolulu.
Bureau of Fisheries. Length 110? to
123 mm. Three examples.

U. S. N. M., no. 62305. Honolulu.
D. S. Jordan. Length 98 to 104 mm.
Three examples.

U. S. N. M., no. 65532. Mangareva.
Albatross Collection (3296 to 3299).
Length 160? to 193 mm.

U. S. N. M., no. 65879. Suva, Fiji.
Albatross Collection (08869 to 08870).
Length 100 to 147 mm.

U. S. N. M., no. 65878. Makemo,
Tuamotus. Albatross Collection (05840).
Length 146 mm.

U. S. N. M., no. 65880. Fakarava, Tuamotus.
Albatross Collection. Length 39 to 43 mm.
Two examples.

¹/_m Meyer, Ann. Soc. Españ. Hist. Nat.
Madrid, vol. 14, 1885, p. 19 (Manado,
 Celebes). ¹/_m Fowler, Journ. Acad. Nat.
Sci. Philadelphia, series 2, vol. 12, 1904,
 p. 529 (Padang). ¹/_m Oshima, Japan.
Journ. Zool., vol. 1, no. 5, March 31, 1927,
 p. 133 (Pescadore Islands, Formosa). ¹/_m
Herre and Mantalan, Philippine Journ.
Sci., vol. 33, no. 4, August 1927, p. 420, pl.
 1, fig. 3 (Manila Bay, Subic Bay, Cebu,
 Tacloban, Zamboanga, Jolo, Sitanai
 Island). ¹/_m Fowler, Mem. Bishop Mus.,
 vol. 10, 1928, p. 215 (compiled); Proc. Acad.
Nat. Sci. Philadelphia, 1929 (1930), p. 609
 (Hong Kong), p. 642 (Padang).
 ? Lethrinus laevis Blancinnes, Hist. Nat.
Poiss., vol. 6, 1830, p. 272. Pondicherry.

U. S. N. M., no. 71793. ⁸⁶⁵ Naha, Okinawa,
Albatross Collection. Length 220 mm.

U. S. N. M., no. 75898. Borneo.
H. G. Raven. Length 208? mm.

U. S. N. M., no. 89044. Tahiti.
J. M. Clements. ~~One~~ Length 115? mm.

A. N. S. P., no. 14141. Samoa.
Dr. H. C. Caldwell. Length 103 mm.
Type of Flammeo achromopterus.

Lethrinus gothofredi Valenciennes, Hist.
nat. Poiss., vol. 6, 1830, p. 286. Vuez. $\frac{1}{2n}$
Rüppell, Neue Wirbelth. Fische, 1835,
p. 120 (references). $\frac{1}{2n}$ Peters, Archiv
Naturgesch., 1855, p. 243 (Mozambique).

Lethrinus opercularis Valenciennes, ~~at.~~ ^{✓ X 100 X}
~~at.~~ ^{✓ at. Poiss.}, vol. 6, 1830, p. 287. Trinquemale,
Ceylon. $\frac{1}{2n}$ Günther, Cat. Fishes Brit. Mus.,
vol. 1, 1851, p. 461 (compiled). $\frac{1}{2n}$ Bleeker,
Nederl. Tijdschr. Dierk., vol. 4, 1874,
p. 117 (China). $\frac{1}{2n}$ Day, Fishes of India,
pt. 1, 1875, p. 136 (compiled). $\frac{1}{2n}$ Bleeker,
Atlas Ichth. Ind. Néerl., vol. 8, 1876-77,
p. 119, pl. (57) 335, fig. 5 (Sumatra,
Nias, Singapore, Bintang, Banka,
Biliton, Java, Luzzind Islands,
Bawean, Bali, Celebes, Sangir, Flores,
Timor, Batjan, Abi major, Ceram,
Amboina). $\frac{1}{2n}$ Karoli, Terness. Füzetek,
Budapest, vol. 5, 1881, p. 157 (Chang River).

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Holocentrus microstomus Günther

Holocentrum microstoma Günther, Cat. Fish. Brit. Mus., vol. 1, p. 34, 1859 (type locality, Amboyna). — Bleeker, Ned. Tijds. Dierk., vol. 4, p. 203, 1874 (compiled). — Schmeltz, Cat. Mus. Godeffroy, no. 5, p. 21, 1874 (Savaii; Tonga). — Günther, Journ. Mus. Godeffroy, vol. 4, p. 98, pl. 64, fig. B, 1875 (Samoa, Society Islands, Tonga, Hawaii, Hervey Islands, Kingmills, Paumotu). — Schmeltz, Cat. Mus. Godeffroy, no. 7, p. 36, 1879 (Savaii; Tonga). — Boulenger, Ann. Mag. Nat. Hist., ser. 6, vol. 20, p. 372, 1897 (Rotuma). — Steindachner, Sitzb. Ber. Akad. Wiss. Wien, vol. 115, pt. 1, p. 1375, 1906 (Savaii).

Holocentrus microstomus Fowler, Proc. Acad. Nat. Sci. Philadelphia, p. 325, 1901 (Thornton Island). — Jenkins, Bull. U. S. Fish Comm., vol. 22, p. 160, 1902 (1903) (Honolulu). — Jordan and Evermann, Bull. U. S. Fish Comm., vol. 23, pt. 1, p. 160, 1903 (1905) (Honolulu). — Seale,

Ocas. Pap. Bishop Mus., vol. 4, no. 1, p. 24, 1906 (Tahiti, Raiatea, Tubuai, Rarotonga). — Jordan and Seale, Bull. Bur. Fisher., vol. 25, p. 226, 1905 (1906) (Samoa). — Jordan and Richardson, Bull. Bur. Fish., vol. 27, p. 248, 1907 (1908) (Cagayancillo). — Fowler, Bull. Bishop Mus., no. 22, p. 24, 1925 (Honolulu), p. 31 (Samoa). — Fowler and Ball, Bull. Bishop Mus., no. 26, p. 9, 1925 (Johnston and Wake Islands). — Fowler, Mem. Bishop Mus., vol. 10, p. 103, 1929 (Society Islands, Pago Pago, Honolulu, Johnston, Wake, Tahiti, Tubuai, Guam, Raiatea, Faté, Rarotonga Islands, type of Holocentrus thorn-tonensis). — Schmidt, Trans. Pac. Comm. Acad. Sci. U. S. S. R., vol. 1, p. 28, 1930 (Kominoto, Riu Kiu). — Fowler, Mem. Bishop Mus., vol. 11, no. 5, p. 322, 1931 (Honolulu).

Holocentrus microstoma Seale, Ocas. Pap. Bishop Mus., vol. 1, no. 3, p. 70, 1900 (1901) (Guam).

Holocentrum argenteum (not Valenciennes)
Bleeker, Act. Soc. Sci. Ind. Néerl.,
 vol. 3, no. 8, p. 1, 1857-58 (Amboina);
 Ned. Tijds. Ned. Indië, vol. 16, p.
 28, 1858 (Amboina); Nederl. Tijds.
 Dierk., vol. 4, p. 208, 1874 (Amboina;
 New Guinea).

~~Holocentrus argenteus Valenciennes~~

6954. West coast Sabtan Island.⁹⁵
November 8, 1908. Length 255 mm.

5987. Zamboanga market. May 26,
1908. Length 393 mm. Silvery gray, anteriorly
dusky and top of head with slightly
olivaceous shades, under surfaces
whitish. Iris silvery. Lips pink,
inside greenish scarlet. Small red
upper lateral blotch on opercle. Dorsals
gray, upper parts vermilion, membranes
of soft dorsal clear vermilion. Anal
gray, membranes somewhat orange.
Caudal gray, tips slightly vermilion.
Pectoral dusky hyaline orange. Ventral
gray, slightly orange at tip.

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Holocentrus thorn-tonensis Fowler, Proc.
Acad. Nat. Sci. Philadelphia, p. 231, fig. 4,
1904 (type locality, Thornton Island).

Holocentrum bleekeri Weber, Siboga Exped.,
vol. 57, Fische, p. 181, 1913 (type locality,
Amboina; Karbaralong; Banda; on Bleeker).
— Weber and Beaufort, Fishes Indo Austral.
Archip., vol. 5, p. 237, 1929 (Karbaralong;
Banda).

Depth 3 to $3\frac{1}{3}$; head $2\frac{4}{5}$ to 3, width
 $1\frac{7}{8}$ to $2\frac{2}{5}$. Snout $3\frac{1}{2}$ to $4\frac{1}{4}$ in head
from upper jaw tip; eye $2\frac{2}{3}$ to $3\frac{1}{8}$,
greater than snout or interorbital,
slightly impinging on upper profile;
maxillary reaches $\frac{1}{5}$ to $\frac{1}{3}$ in eye,
expansion $2\frac{1}{2}$ to 3 in eye, length 3
in head from snout tip; interorbital
 $4\frac{2}{5}$ to 5, depressed, low, slightly
concave medially; 2 opercular spines,
upper larger, $2\frac{2}{3}$ to $2\frac{4}{5}$ in eye;
peropercular spine $2\frac{1}{2}$ to 3 in eye.
Gill rakers 6 + 13, lanceolate, equals
gill filaments or $3\frac{1}{2}$ in eye; 2 above
and 3 below rudimentary.

Scales 47 or 48 in lateral line to caudal base and 1 or 2 more on latter; 4 above, 8 ~~or~~ 9 below, 7 or 8 predorsal, 5 rows on cheeks.

Scales with 2 to 8 short, low, close set points; row of 30 to 32 apical denticles, ^{medially largest}; basal striae very fine, not extended apically.

D. XI, I, 12, I or XI, I, 13, I, fourth spine $1\frac{2}{3}$ to $1\frac{5}{6}$ in head, second branched ray $1\frac{2}{3}$ to $1\frac{4}{5}$; A. IV, 8, I or IV, 9, I, third spine $1\frac{1}{10}$ to $1\frac{1}{6}$, first branched ray $1\frac{1}{3}$ to $1\frac{2}{5}$; caudal $1\frac{2}{5}$ to $1\frac{1}{2}$, widely forked; least depth of caudal peduncle $3\frac{7}{8}$ to $4\frac{2}{5}$; pectoral $1\frac{2}{5}$ to $1\frac{3}{5}$; ventral $1\frac{1}{4}$ to $1\frac{1}{3}$.

Back brown, sides and below paler, with silvery white reflections. Along each row of scales longitudinal

vol. 4, 1802, pp. 453, 471, plate 11, fig. 1

(New France, East Indies, Indo Pacific).

Chetodon cornutus Bonnaterre, Tabl. Ichth.,

1788, p. 80, plate 44, fig. 168 (Indies).

Zanclus cornutus Cuvier, Hist. Nat. Poiss.,

vol. 7, 1831, p. ¹⁰²48, plate 177 (Caroline,

Hawaii, Tongatabu, Vanicolo, Celebes).

— Guichenot, Notes I. Reunion, vol. 2, 1862,

p. 26. — Playfair, Fishes of Zanzibar, 1866,

p. 65 (Zanzibar). — Capello, Jorn. Soc.

Lisboa, 1871, p. 280 (Mozambique). —

Peters, Monatsb. Akad. Wiss. Berlin, 1876,

p. 438 (Mauritius). — Day, Fishes of India,

pt. 1, 1875, p. 111, plate 28, fig. 4. — Bleeker,

Atlas Ichth. Ind. Néerl., vol. 9, 1877, p. 77,

plate (22) 366, figs. 1-2 (Sumatra, Batu,

Cocos, Java, Celebes, Flores, Timor, Halmahera,

Ternate, Batjan, Cram, Amboina, Haruco,

Banda, Goram, Waigiu, New Guinea). —

Meyer, Ann. Soc. Espana, Hist. Nat. Madrid,

whitish band, narrowing behind and following courses of scales. In preserved examples bands often well contrasted, especially on back. Iris yellowish brown, with gray. Spinous dorsal pale, with submarginal blackish brown band, broad over first 2 or 3 membranes, then narrowing. Fins all pale or light brownish.

East Indies, Philippines, Riu Kiu, Melanesia, Micronesia, Polynesia, Hawaii. A very handsome species, especially noteworthy in its alternate white and bright red longitudinal bands, short opercular and preopercular spines, short muzzle and greatly enlarged and elongated fourth anal spine, this reaching, when depressed,

— Weber, Siboga Exped., band 65, 1913, p. 325 (Karkaralong Island and Rotti).

— McCulloch, Mem. Queensland Mus., vol. 7^{pt. 4}, 1922, p. 242 (Capricorn Group). —

Fowler, Bishop Mus. Bull., no. 22, 1925, p. 12 (Guam), p. 28 (Hawaii), p. 34 (Samoa). — Fowler and Ball, Bishop

Mus. Bull., no. 26, 1925 (1926), p. 18

(Johnston Island, French Frigate Shoals, Laysan).

Chaetodon cornutus Linnaeus, Syst. Nat., ed. 10, 1758, p. 273. East Indies. — Linnaeus, l.c.,

ed. 12, 1766, p. 461. — Bloch, Naturg. Ausl.

Fische, vol. 3, 1787, p. 72, plate 200, fig. 2

(East Indies). — Gmelin, Syst. Nat. Linn.,

1789, p. 1241 (India). — Walbaum, Arted.

Pisc., vol. 3, 1792, p. 442 (on Linnaeus and

Bloch). — Forster, Fauna Indica, 1795, p. 14.

— Schneider, Syst. Ichth. Bloch, 1801, p. 22

(Tranquebar). — Lacépède, Hist. Nat. Poiss;

well beyond caudal fin base.

872

→
U. S. N. M., No. 52374. Samoa.
Bureau of Fisheries. Length 142 to
175 mm. Four examples.

U. S. N. M., No. 55299. Honolulu.
Bureau of Fisheries. Length 140 mm.

One example. Oeki, Boero Island.
December 9, 1909. Length 152 mm.

One example. [21/13.]

Length 170 mm.

429

Holacanthus melanoxoma Bleeker.

Holacanthus melanoxoma Bleeker, Nat.

Tijds. Ned. Indië, deel 5, 1853, 78. Luwajing,
Nolor. — Günther, Cat. Fish. Brit. Mus.,
vol. 2, 1860, p. 55 (copied). — Günther,
Cruise of Curacao, Brechley, 1873, p. 410
(misol, noturus).

Chaetodontophus melanoxoma Bleeker, Atlas
Ichth. Ind. Néerl., vol. 9, 1877, p. 57, plate
(9) 369, fig. 1 (non 3) (Nolor example).

Holacanthus dimidiatus Bleeker, Nat. Nolor.

Ned. Ind. Néerl. (Elfd. V. d. Ambon.), vol. 8,
p. 11. Amboina.

Holocentrus suborbitalis Gill

873

Holocentrum suborbitale Gill, Proc.
Acad. Nat. Sci. Philadelphia, p. 86, 1863
(type locality, Lower California).
Cape San Lucas,

~~Holocentrum suborbitale~~ Jordan, Proc.
U. S. Nat. Mus., vol. , p. 375, 1885
(Magatlan; Panama).

— Jordan and McGregor, Rep. U. S. Fish Com., pt. , 1898 (1899) p. 275
Holocentrus suborbitalis Jordan and Evermann,
Bull. U. S. Nat. Mus., no. 47, pt. 1, p. 850, 1896
(compiled). — Fowler, Proc. Acad. Nat.
Sci. Philadelphia, p. 409, 1916 (Panama).

— Gilbert and Starks, Mem. Cal. Acad.
Sci., vol. 4, p. 66, 1904 (Panama). ✓

— Snodgrass and Heller, Proc. Wash.
Acad. Sci., vol. 6, p. 360, January 31,
1905 (Cocos Island; Charles and
Tower Islands).

(Clarion and Socorro Islands)

Holocentrus suborbitalis Gill

Holocentrum suborbitale Gill, Proc.
Acad. Nat. Sci. Philadelphia, p. 86, 1863
(type locality, Lower California).
Cape San Lucas,

~~Holocentrum suborbitale~~ Jordan, Proc.
U. S. Nat. Mus., vol. , p. 375, 1885
(Magatlan; Panama).

— Jordan and McGregor, Rep. U. S. Fish Com., pt. , 1898 (1899) p. 275
Holocentrus suborbitalis Jordan and Evermann,
Bull. U. S. Nat. Mus., no. 47, pt. 1, p. 850, 1896
(compiled). — Fowler, Proc. Acad. Nat.
Sci. Philadelphia, p. 409, 1916 (Panama).

— Gilbert and Starke, Mem. Cal. Acad.
Sci., vol. 4, p. 66, 1904 (Panama). ✓

Kendall and Radcliffe, Mem. Mus.
Comp. Zool., vol. 35, p. 94, 1912 (Toboguilla
and Perico Islands, Panama Bay;
lat. $7^{\circ}15'N.$, long. $82^{\circ}8'W.$; lat. $9^{\circ}7'N.$, long. 85°
 $1'W.$; Wreck Bay, Chatham Island).

(Clarion and Hocorro Islands)

Back and above brown, bottom
to whitish, with silvery white
under surface of head and abdomen,

Sci., vol. 4, p.
Kendall and
Camp. Zool., vol.
and Series I.
lat. $7^{\circ}15'N.$, long.
 $1^{\circ}W.$; Wreck.

— Week and Hildebrand, Field Mus.
Publ. no. 215, Zool. Ser. no. 15, p. 300,
December 20, 1923 (Taboga Island,
Balboa, Panama City).

Adiorix suborbitalis Jordan,
Evermann, Clark, Rep. U. S. Com. Fisher.,
1928 (1930), pt. 2, p. 236 (reference).

Case 179

499

Dentex matsubarae (Jordan and Evermann)
Hemipterus matsubarae Jordan and Evermann,
Proc. U. S. Nat. Mus., vol. 25, 1903, p. 346,
fig. 18. Giran, Formosa. ¹/₂ Jordan and
Richardson, Mem. Carnegie Mus., vol. 4, no.
4, 1911, p. 186 (copied).

Depth $3\frac{2}{3}$; head $3\frac{1}{2}$, profile above
oblique. Snout $2\frac{7}{8}$ in head; eye $3\frac{3}{5}$,
 $1\frac{1}{4}$ in snout; preorbital depth $\frac{7}{8}$ of
eye; maxillary reaches $\frac{1}{4}$ in eye, length
 $2\frac{2}{3}$ in head; jaws subequal; single row
of small cardiform teeth on sides of
each jaw and lower jaw row widens
into band of villiform teeth anteriorly,
those in front slightly larger; 8 large
curved canines in front above, none
below; interorbital 6, low; preopercle
edge entire.

Scales 48 in lateral line (51 on
figure); 4 above, 9 below, predorsal

275-

Depth $2\frac{3}{5}$ to $2\frac{2}{3}$; head $2\frac{3}{4}$ to $2\frac{4}{5}$, width 2. Snout $4\frac{1}{5}$ to 5 in head; eye $2\frac{3}{4}$ to $3\frac{3}{5}$, greatly exceeds snout or interorbital; maxillary reaches $\frac{1}{2}$ in eye, expansion 2 to $2\frac{4}{5}$ in eye, length $2\frac{3}{5}$ to $2\frac{4}{5}$ in head; interorbital $3\frac{2}{3}$ to $3\frac{3}{4}$, low, concave medially; 2 opercular spines, lower longer or 2 to $2\frac{4}{5}$ in eye; preopercular spines 2 to $3\frac{2}{3}$. Gill rakers $8 + 13$, lanceolate, $1\frac{1}{4}$ in gill filaments, which $2\frac{1}{5}$ in eye; 5 above and 6 below rudimentary.

Scales 37 or 38 in lateral line to caudal base and 4 or 5 more on latter; 4 above, 9 below, 8 predorsal, 5 rows on cheeks. Scales with 2 or 3 low short median close set basal points;

31289 and 31290 A.N.S.P. Apia,
Samoa. Bureau of Fisheries (10775).
Length 40 to 44 mm.

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row of 25 to 42 apical denticles, median largest; cirruli fine, basal, not extended apically.

D. XI, I, 13, I, third spine $1\frac{9}{10}$ to $2\frac{1}{5}$ in total head length, second branched ray $1\frac{2}{3}$ to 2; A. IV, 9, I, third spine $1\frac{2}{3}$ to $1\frac{3}{4}$, first ray $1\frac{3}{4}$ to 2; caudal $1\frac{1}{3}$ to $1\frac{2}{5}$, forked, lobes rather short, pointed; least depth of caudal peduncle $3\frac{2}{5}$ to $3\frac{1}{2}$; pectoral $1\frac{2}{5}$ to $1\frac{1}{2}$; ventral $1\frac{1}{3}$ to $1\frac{1}{2}$.

Brown, little paler below. Each scale of body with pale spot, borders darker, so reticulated pattern forms. Iris yellowish brown. Fins pale, each membrane of spinous dorsal anteriorly with large darker brown area.

Mexico, Panama, Galapagos Islands.

along dorsal base. Dark purple spot
on pectoral base, rest of fin buff.
Ventral pale purple. Length 225 mm.

31281 - 90 U.S.N.M. Lipin, Samou.
Bureau of Fisheries (07755). Length
40 to 44 mm. Not included in Jordan
and Seale's list.

56161 U.S.N.M. Buluan. Bureau of
Fisheries (3062). Length 48 mm. As
Lethrinus ornatus. Second anal spine
clearly longer than third.

48621 A.N.S.P. Philippines. Commercial
Museum of Philadelphia. Length 62 mm.
As Lethrinus kuraka.

52767 to 52770, A.N.S.P. Calapan. Rev.
Joseph Clements. Length 140 to 155? mm.

52779 to 52780 A.N.S.P. Aruni. Rev.
Joseph Clements. Length 91 to 132 mm.

52771 to 52778 A.N.S.P. Aruni. Rev.
Joseph Clements. Length 61 to 102 mm.

U. S. N. M., no. 2319. Cape San Lucas. ⁸⁷⁷
J. Xantus. Length 93 to 99 mm. Three
examples. Type of Holocentrum suborbitale.

U. S. N. M., 2319 and 2320. Cape
San Lucas. J. Xantus. Length 51 to 70
mm. 34 examples.

U. S. N. M., no. 2765. Panama.
Capt. J. M. Dow. Length 42 to 100 mm.
Four examples.

U. S. N. M., no. 7312. Cape San Lucas.
J. Xantus. Length 47 to 75 mm.
27 examples.

U. S. N. M., no. 30880. Mazatlan.
Dr. C. H. Gilbert. Length 56 to 82 mm.
Seven examples.

U. S. N. M., no. 37153. Tres Marias
Islands, Mexico. M. Forrer. Length
58 to 96 mm. Six examples.

U. S. N. M., no. 50032. Galapagos.
R. E. Snodgrass and E. Heller.
Length 194 mm.

orange violet, which also extends on
border of soft dorsal. Anal reddish.
Caudal violet.

Valenciennes says of Lethrinus cinereus,
compared with Lethrinus erythrurus, that
its body is more elevated, snout shorter,
teeth more rounded. Reddish on back,
grayish on flanks, belly and greater
part of cheeks. Fins grayish. Caudal
with traces of dark transverse bands.
Pectoral pale yellowish. Length 150 mm.

Valenciennes notices Lethrinus maculatus:
Body more oval than in Lethrinus borealis,
snout somewhat more short, teeth smaller
and more pointed. Head above and back
reddish or wine brown, below mouth
and cheeks silvery. Below eye 2 rows of
brown points. On flanks, above lateral line,
a black blotch and 5 or 6 obscure brownish
bands. No markings on opercle or pectoral axil.
Length 175 mm.

U. S. N. M., no. 47434. Mazatlan.
Dr. D. S. Jordan. Length 80 to 85 mm.
Six examples.

U. S. N. M., no. 65540. Wreck Bay,
Chatham Islands. Albatross Collection.
Length 176 mm.

U. S. N. M., no. 65541. Toboquilla
Island. Albatross Collection. Length
164 to 189 mm. Two examples.

U. S. N. M., no. 65542. Acapulco,
Mexico. Albatross Collection. Length
133 to 136 mm. Two examples.

U. S. N. M., no. 65543. Toboquilla
Island. Albatross Collection. Length
167 mm.

U. S. N. M., no. 65590. California
coast. Albatross Collection (4615).
October 19, 1904. Length 13 mm.
Rhyrchiethys stage.

lateral line, 6 above, 16 below, predorsal extend forward opposite hind eye edge. D. X, 9, fourth and last spines subequal or $\frac{3}{4}$ in head, eighth ray $2\frac{1}{4}$; A. III, 8, third spine $3\frac{1}{8}$, first ray $2\frac{3}{4}$; caudal $1\frac{1}{10}$, little emarginate behind; least depth of caudal peduncle $2\frac{3}{4}$; pectoral $1\frac{1}{8}$; ventral $1\frac{3}{4}$.

The coloration of Lethrinus frenatus by Valenciennes is as follows, his type 225 mm. long:

Back greenish, belly whitish. Along flanks 18 to 20 longitudinal yellowish olive lines. Back above lateral line spotted with bluish dots. Head olive. Before eye 3 bluish or violet oblique lines on suborbitals, one also along front and fifth below edge of orbit. Preopercle limb with front border violet. Inside mouth orange. Dorsal mottled

U. S. N. M., no. 65591. California coast.
Albatross Collection (4619). October
20, 1904. Length 12 to 15 mm. Nine
examples. Rhynchichthys stage.

U. S. N. M., no. 79895. Balboa, Canal
Zone. Meek and Hildebrand.
February 8, 1912. Length 68 to 113 mm.
Eight examples.

U. S. N. M., no. 79897. Balboa.
Meek and Hildebrand. February 9, 1912.
Length 57 to 75 mm. Three examples.

U. S. N. M., no. 79904. Panama.
Meek and Hildebrand. Length 143 to
193 mm. Three examples.

with these markings all more distinct, besides 7 dark transverse streaks which variably broken or incomplete.

Madagascar, India, Ceylon, East Indies, Philippines, China, Riu Kiu, Japan, Micronesia, Northern Territory of Australia and Queensland. I have followed Sauvage in placing Lethrinus eniger with this species, although the coloration is described as quite different by Valenciennes, possibly due to age. Sauvage gives a figure of the type of Lethrinus frenatus showing:

Depth $2\frac{2}{3}$; head $2\frac{9}{10}$. Snout $2\frac{1}{10}$ in head; eye $3\frac{1}{3}$, $1\frac{1}{3}$ in snout; maxillary reaches $\frac{3}{4}$ to eye, length $2\frac{3}{5}$ in head; teeth conic, posterior more rounded above than below; interorbital less than eye, very low. Scales 45 in

Holocentrus binotatus Duoy and Gaimard

Holocentrum binotatum Duoy and Gaimard,
Voy. Estrolabe, Zool., vol. 13, p. 679, pl. 14,
fig. 4, 1834 (type locality, New Guinea;
Guam). — Bleeker, Nat. Tijds. Ned. Indië, vol. 15,
⁽¹⁹⁸⁾ p. 207, 1858 (Goram).

Holocentrus binotatum Seale, Occas. Pap.
Bishop Mus., vol. 1, no. 3, p. 68, 1900 (1901)
(Guam) (error).

Holocentrus binotatus Jordan and Seale,
Bull. Bur. Fisher., vol. 25, p. 224, 1905
(1906) (Apia and Pago Pago). —

Snyder, Proc. U. S. Nat. Mus., vol. 42, p.
496, 1912 (Okinawa). — Fowler, Mem.
Bishop Mus., vol. 10, p. 98, 1928 (Agaña,
Guam; Shortland Island; Samoa).

Holocentrum tiereoides Bleeker, Natuurk.
Tijds. Ned. Indië, vol. 5, p. 334, 1853
(Type locality, Amboyna). — Günther,
Cat. Fish. Brit. Mus., vol. 1, p. 41, 1859
(compiled).

— Bleeker, Nederl. Tijds. Dierk., vol. 4, p.
228, 1874 (Celebes, Ternate, Amboyna);
→ Weber, Siboga Exped., vol. 57, Fische, p. 184,
1913 (Banda).
→ Atlas Ichth. Ind. Néerl., vol. 9, pl. (4) 358, fig. 1, 1877.

— Weber and Beaufort, Fish. Indo-
Austral. Archip., vol. 5, p. 249, 1929
(Pulu Weh, Kambangan, Flores, Banda,
Ambon). — Giltay, Mus. Roy. Hist. nat.
Belg., vol. 5, pt. 3, p. 50, April 30, 1933
(Banda Neira and Lantor).

Holocentrus tiereoides Bryan and Herre,
Occas. Pap. Bishop Mus., vol. 2, no. 1, p. 128,
1902 (1903) (Marcus Island). — Seale,
Occas. Pap. Bishop Mus., vol. 4, no. 1, p. 20,
1906 (Fate; Tahiti). — Kendall and
Goldsborough, Mem. Mus. Comp. Zool., vol.
26, p. 265, 1911 (Papeete; Jaluit). —
→ Fowler, Mem. Bishop Mus., vol. 10, p. 100,
1928 (Tahiti; Marcus Island; Fate; Papeete;
Jaluit); vol. 11, no. 5, p. 321, 1931 (reference).

(86b)
of side on lateral line and below
large dusky blotch about twice size
eye diameter in length. Top of head
olive, side more or less washed with
bronze. Iris silvery and dusky.
Dorsals dull vermilion, soft rays
greenish. Anal clear vermilion on
membranes, rays greenish. Caudal
vermilion over olive, with obscure pale
bars near base. Paired fins with
hyaline membranes, rays more or
less orange.

Holocentrum tagen Thiollière, Fauna
Woodlark, p. 149, 1857 (type locality,
Woodlark Island).

Depth $2\frac{2}{3}$ to $2\frac{3}{4}$; head $2\frac{2}{3}$ to $2\frac{4}{5}$,
width $1\frac{7}{8}$ to 2. Snout 4 to $4\frac{1}{4}$ in
head from snout tip; eye $2\frac{4}{5}$ to 3,
greatly exceeds snout or interorbital;
maxillary reaches $\frac{1}{3}$ to $\frac{1}{2}$ in eye,
expansion $1\frac{7}{8}$ to $2\frac{3}{4}$ in eye,
length $2\frac{1}{4}$ to $2\frac{2}{5}$ in head from
snout tip; interorbital $4\frac{1}{2}$ to $5\frac{1}{2}$,
low, very slightly concave; 2 opercular
spines, upper larger and longer;
preopercular spine $1\frac{1}{3}$ to 2 in eye.
Gill rakers 6 + 13, lanceolate,
equal gill filaments or 3 in eye.

Scales 42 or 43 in lateral
line to caudal base and 4 or 5
on latter; 4 above, 8 below, 7 or 8
predorsal to occiput, 4 rows on

16090, 16091. Catangan Bay. May 14,
1909. Length 253 to 260? mm.

5510. Catbalogan, Samar Island.
April 15, 1908. Length 278 mm.

12828. Cavite and San Roque market.
June 27, 1908. Length 100 mm.

6426. Caxiagan Island. January 3, 1908.
Length 220 mm.

7513, 12272, 12273. Chase Head, Endeavor
Strait, Palawan Island. December 22, 1908.
Length 222 to 263 mm.

^{7543,}
^{12876,}
10687, 12875, 20282. Cotabato, Mindanao.
May 20, 1908. Length ⁷⁴~~107~~ to ¹⁹⁰~~176~~ mm.

8545. Cuyo Harbor. April 9, 1909.
Length 313 mm.

8541. Dalaganem Island, Palawan.
April 8, 1909. Length 265 mm.

21349. Davao, Mindanao. May 16, 1908.
Length 170 mm.

cheek to preopercle ridge. Scales with 3 or 4 short basal points; apical denticles row of 8 to 10 blunt, irregular, rather obsolete points; circuli fine and numerous basally.

D. XI, I, 13, I or XI, 12, I, third spine $2\frac{1}{4}$ to $2\frac{2}{5}$ in total head, second branched ray $1\frac{2}{3}$ to $1\frac{7}{8}$; A. IV, 9, I, third spine $1\frac{1}{5}$ to $1\frac{2}{3}$, first branched ray $1\frac{1}{4}$ to $1\frac{3}{5}$; caudal $1\frac{1}{3}$ to $1\frac{2}{5}$, deeply forked, slender lobes pointed; least depth of caudal peduncle $4\frac{1}{4}$ to $4\frac{3}{5}$; pectoral $1\frac{1}{4}$ to $1\frac{2}{5}$; ventral $1\frac{1}{3}$ to $1\frac{1}{2}$.

Light brown, each row of scales on body longitudinally with pale band, each median on scale row. Iris pale or whitish. Fins all pale or very light to yellowish.

1 example. Paluan Bay or Tomahew.

December 11, 1908. Length 213 mm. [1353.]

5953. Panabutan Bay, Mindanao.

February 6, 1908. Length 200 mm.

8424, 18819. Pandanon Island. March 23, 1909. Length 278 to 293 mm.

5500. Pangasinan Island. February 13, 1908. Length 210 mm.

8175. Port Busin, Baniyas Island. March 7, 1909. Length 337 mm.

8186. Port Busin. March 8, 1909. Length 250 mm.

18704, 22203. Port Junclo, Luzon. July 13, 1908. Length 75 to 104 mm.

7257, 7281. Port Natalvi, Luzon. November 23, 1908. Length 53 to 253 mm.

29 examples. In the smaller examples, 53 to 126 mm. Body variably marked with dark vertical bands, very variably broken or set off as blotches.

884

brown. At base of each first 2 membranes of spinous dorsal dark brown spot.

East Indies, Micronesia, Melanesia, Polynesia. The dark blotch on the first 2 spinous dorsal membranes is quite variable as sometimes the first extends up ~~as~~ over the greater part of the membrane. I have not found any trace of the "silvery patch on the upper part of the caudal peduncle, just behind the dorsal" as noted by Weber and Beaufort.

920

Hepatus lineatus (Linnaeus).

Chaetodon lineatus Linnaeus, Syst. Nat.,
ed. 10, 1758, p. 274. East Indies. — Linnaeus,
l.c., ed. 12, 1766, p. 463. — Gmelin, Syst.
Nat. Linn., 1789, p. 1246 (India). —
Walbaum, Arted. Pisc., vol. 3, 1792, p.
441 (in Linnaeus). — Forster, Land. Indica,
1795, p. 15.

Chetodon lineatus Bonnaterre, Tabl. Ichth.,
1788, p. 84, plate 45, fig. 172 (East Indies).

Acanthurus lineatus Valenciennes, Hist. Nat.
Pois., vol. 10, 1835, p. ²²³464 (Waigiu and Malan).
— Bleeker, Nat. Tijds. Ned. Indië, deel 4, 1853,
p. 263 (Priaman and Cauer); deel 6, 1854, p. 517
(Debekan); deel 13, 1857, p. 478 (Karangbollong, Java);
deel 17, 1858-59, p. 130 (Atapoepe, Timor);
deel 19, 1859, p. 331 (Patjitan, Java), p. 333
(Karangbollong); deel 20, 1859-60, p. 203 (Karang-
bollong). — Bleeker, Verh. Batav. Genoot.
(Nat. Ichth. Bengal), deel 25, 1853, p. 48. —

885
U. S. N. M., No. 52277. Samoa.
Bureau of Fisheries. Length 90 to
108 mm. Three examples.

U. S. N. M., No. 65881. Jaluit,
Marshall. Albatross Collection.
Length 128 mm. As Holocentrus
tieroides.

U. S. N. M., No. 65882. Papeete,
Tahiti. Albatross Collection.
Length 110 mm. As Holocentrus
tieroides.

9970. Busin Harbor, Burias Island.⁹¹⁴

March 8, 1909. Length 200 mm.

271, 6077, 9968, 9969, 9971, 10966 to 10968,

16414. Cuyayanen Island. March 31, 1909.

Length 165 to 200 mm.

15483 and 15484. Cebu market. March 26,

1909. Length 182 to 187 mm.

8, 6892, 6893. Danawan Island and Vi
Amil Island. September 26, 1909. Length
165 to 176 mm.

20470 and 21462. Danawan Island and
Vi Amil Island. September 27, 1909. Length
100 to 110 mm. (3 examples.)

8885, 14372 and 14373. Mabul Island.
September 29, 1909. Length 158 to 200 mm.

A 1084 and A 1085. Minitara Island.

November 26, 1909. Length 203 to 220 mm.

886

Holocentrus unipunctatus Günther

Holocentrum unipunctatum Günther,
Journ. Mus. Godeffroy, vols. 2-3, pts.
5-6, p. 95, pl. 65, fig. a, 1874 (type
locality, Solomon Islands; Tonga
Islands). — Seale, Decas. Pap.
Bishop Mus., vol. 1, no. 3, p. 69, 1900
(1901) (Guam).

Holocentrus unipunctatus Fowler,
Mem. Bishop Mus., vol. 10, p. 98, 1929
(Sesioy, Guam).

Depth $2\frac{2}{5}$; head $2\frac{3}{4}$. Snout $3\frac{4}{5}$ in head from snout tip; eye $3\frac{1}{8}$, greater than ^{or interorbital} snout₁; maxillary reaches $\frac{1}{3}$ in eye, expansion 2 in eye, length $2\frac{3}{5}$ in head from snout tip; interorbital 6 to 7, low; preopercular spine $1\frac{3}{4}$ in eye; 2 subequal opercular spines, rather small.

Scales 40 in lateral line to caudal base and 3 more on latter; 4 above, 8 below, 5 rows on cheeks.

D. XI, I, 15, third spine 2 in total head length, second ray $1\frac{3}{4}$; A. IV, I, 9, I, third spine $1\frac{2}{3}$, first simple ray $1\frac{2}{3}$; caudal $1\frac{1}{4}$, well forked; least depth of caudal peduncle $3\frac{1}{4}$.

on cheek to preopercle ridge, broad
flange naked.

D. X, 9, I, fourth spine 2 in head,
A. III, 7, I, third spine 3, first ray $2\frac{9}{10}$;
first ray $2\frac{1}{10}$; caudal 1, deeply forked,
slender lobes pointed; least depth of
caudal peduncle $3\frac{4}{5}$; pectoral $1\frac{2}{5}$;
ventral $1\frac{3}{5}$.)

Rose colored. On figure paler below
and on fins with hind caudal edge
darker. Length 150 mm? (Valenciennes.)
Moluccas.

pectoral $1\frac{1}{3}$, rays I, 14; ventral rays I, 7, fin $1\frac{3}{5}$ in total head.

Olive, with violet sheen, more purplish in young, which also with streaks. Fins and hind caudal edge reddish.

Small ^{dark} blotch between first and second dorsal spines basally on membrane. Length 152 mm. (Günther.)

Melanesia, Micronesia, Polynesia. I have studied but a single specimen of this species, obtained at Sesio, Guam, now in the Bishop Museum.

Case 79

Dentex peronii Valenciennes

497

Dentex peronii Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 245, pl. 154, no locality. $\frac{1}{m}$

Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876-77, p. 85 (copied).

Synagris peronii Günther, Cat. Fishes Brit. Mus., vol. 1, 1870, p. 376 (compiled; gives Molucca Sea).

Depth $3\frac{1}{8}$; head 3, width $2\frac{1}{5}$. Snout $2\frac{2}{3}$ in head; eye $3\frac{1}{5}$, $1\frac{1}{5}$ in snout; maxillary reaches $\frac{4}{5}$ to eye, length $3\frac{1}{10}$ in head; jaws about equal; 6 small upper canines, none below, where all uniformly lower; interorbital low; preopercle entire; preorbital depth $1\frac{1}{2}$ in eye.

Scales more than 60 (figure shows about 51 in lateral line; 4 above, 13 below, 9 predorsal but not extending forward far as hind eye edge; 5 rows

889

Holocentrus erythraeus Günther

Holocentrum erythraeum (Günther), Cat.
Fish. Brit. Mus., vol. 1, p. 32, 1859
(type locality, Sea of San Christoval,
Solomons). — Schmeltz, Cat. Mus.

Godeffroy, no. 5, p. 21, 1874 (Samoa).

— Günther, Journ. Mus. Godeffroy,
vol. 4, — p. 99, pl. 63, fig. B, 1875
(Solomons; New Hebrides; Hervey
Islands; Kingmills; Society Islands;
Paumotu; Hawaiian Islands). —

Waite, Mem. Austral. Mus., no. 3, p. 186,
1897 (Funafuti, Ellice Islands). —

Boulenger, Ann. Mag. Nat. Hist., ser.
6, vol. 20, p. 372, 1897 (Rotuma). —

Steindachner, Sitzb. Ber. Akad. Wiss.
Wien, vol. 115, pt. 1, p. 1374, 1906 (Upolu).

(Pöhl, Cat. Mus. Godeffroy, no. 10, p. 30, 1884
(Samoa)). —

290

Holocentrus erythraeus Smith and Swain,
Proc. U. S. Nat. Mus., vol. 5, p. 127,
1882 (Johnson Island). — Jenkins, Bull.
U. S. Fish Comm., vol. 22, p. 441, 1902
(1903) (Honolulu). — Snyder, Bull.
U. S. Fish Comm., vol. 22, p. 523, 1902
(1904) (Honolulu). — Jordan and
Evermann, Bull. U. S. Fish Comm.,
vol. 23, pt. 1, p. 161, 1903 (Honolulu;
Kailua). — Jordan and Seale, Bull.
Bur. Fisher., vol. 25, p. 224, 1905 (1906)
(Samoa). — Fowler, Bull. Bishop
Mus., no. 22, p. 6, 1925 (Guam). —
Fowler and Ball, Bull. Bishop Mus.,
no. 26, p. 9, 1925 (Wake Island). —
Fowler, Mem. Bishop Mus., vol. 10,
p. 99, 1928 (Kingsmills; Ebon Islands;
Hawaiian Islands; Johnston Island;
Apia; Wake Island); vol. 11, no. 5, p. 321,
1931 (reference).

Holocentrus erythroceus Waite, Rec.
Austral. Mus., vol. 5, p. 3, 1903 (Paanapa;
Ocean Island; Gilberts) (error).

Depth $2\frac{3}{5}$ to $2\frac{7}{8}$; head $2\frac{3}{5}$ to $2\frac{4}{5}$, width 2 to $2\frac{1}{5}$. Snout $3\frac{3}{5}$ to $4\frac{1}{5}$ in head from upper jaw tip; eye $3\frac{1}{4}$ to $4\frac{1}{4}$, greater than to $1\frac{1}{5}$ in snout with age, greater than interorbital; maxillary reaches $\frac{2}{5}$ to $\frac{1}{2}$ in eye, expansion $1\frac{1}{2}$ to $1\frac{3}{4}$ in eye, length $2\frac{1}{5}$ to $2\frac{1}{3}$ in head from snout tip; interorbital $4\frac{7}{8}$ to $5\frac{2}{5}$, low, depressed; opercular spines 2, short, upper slightly longer; preopercular spine 1 to $1\frac{1}{3}$ in eye. Gill rakers 9 + 13 or 14, with rudiments 4 above and 2 below, lanceolate, $1\frac{1}{3}$ in to equal gill filaments or $2\frac{1}{2}$ to $2\frac{3}{4}$ in eye.

Scales 46 to 48 in lateral line to caudal base with 4 to 7 more on latter; 4 above, 7 or 8 below, 8 or 9 predorsal, 4 or 5 rows on cheeks.

846
5288 to 5289, 5590. Romblon Harbor.

March 25, 1908. Length 120 to 145 mm.

584. Sablayan, Mindoro. December 13, 1908.
Length 113 mm.

5709. Sanguisipo Island. February 24, 1908.
Length 66 mm.

A 637. Simalue Island. September 22, 1909.
Length 179 mm.

7849. Tagnak Island. January 7, 1909.
Length 147 mm.

433. Talissi Island. November 9, 1909.
Length 92 mm.

593 and 594. Tara Island. December 15, 1908.
Length 110 to 127 mm.

5831 to 5833. Tataibada Port. May 15, 1908.
Length 125 to 145 mm.

^{and 10403.}
10402, Tilig, Lubang Island. July 14, 1908.
^{132 to}
Length 153 mm.

4773. Trumindao Island. February 26, 1908.
Length 74 mm.

Scales with 5 basal radiating striae and as many points; apical denticles 23 to 28; circuli fine.

D. XI, 14, I, third spine $2\frac{4}{5}$ to 3 in total head length, third ray $1\frac{7}{8}$ to $2\frac{4}{5}$; A. IV, 9, I, third spine $1\frac{2}{3}$ to 2, second branched ray $1\frac{2}{3}$ to 2; caudal $1\frac{1}{3}$ to $1\frac{3}{5}$?, forked; least depth of caudal peduncle $3\frac{2}{5}$ to 4; pectoral $1\frac{4}{5}$ to $1\frac{7}{8}$, rays I, 13; ventral I, 7, fin $1\frac{4}{5}$ to $1\frac{7}{8}$ in total head length.

Back pale olivaceous, body color otherwise pale brownish and little paler below. Pale longitudinal bands, each median on scale course over median third. Spinous dorsal with narrow whitish edge and pale spot on

p. 19 (Kordo, Mysore). ¹/_m Evermann
and Seale, Bull. Bur. Fisher., vol. 26,
 1906 (1907), p. 26 (Bacon); Proc. U. S.
 Nat. Mus., vol. 31, 1906 (1907), p. 509
 (Zolo). ¹/_m Jordan and Richardson,
 Bull. Bur. Fisher., vol. 27, 1907 (1908),
 p. 259 (Calayan). ¹/_m Kendall and
Goldsbrough, Mem. Mus. Comp. Zool.,
 vol. 26, 1911, p. 290 (Suva, Fiji). ¹/_m Fowler,
 Copeia, no. 57, June 18, 1918, p. 64
 (Philippines); Bishop Mus. Bull., no.
 22, 1925, p. 10 (Guam).

④ Lethrinus molnisi Bleeker, Nederland.
 Tijdschr. Dierk., vol. 4, 1874, p. 328
 (Batjan, Ibi major, Timor). ¹/_m Snyder,
 Proc. U. S. Nat. Mus., vol. 42, 1912, p. 500
 (Alsinawa). ¹/_m Herre and Montalban,
 Philippine Journ. Sci., vol. 33, no. 4,
 August 1927, p. 400, pl. 1, fig. 1 (Leyaspi,
 Calapan, Bulalacao Bay, Tablas,

middle of each membrane between
each spine.

Riu Kiu, Micronesia, Melanesia,
Polynesia, Hawaii.

D. X, 9, 5, fourth spine $2\frac{2}{3}$ to $3\frac{2}{5}$ in head, fourth ray $2\frac{1}{2}$ to $2\frac{2}{3}$; A. III, 8, I, third spine $2\frac{7}{8}$ to $3\frac{1}{3}$, second ray $2\frac{1}{2}$ to 3 ; caudal $1\frac{1}{2}$ to $1\frac{1}{3}$, deeply emarginate; least depth of caudal peduncle 3 to $3\frac{1}{8}$; pectoral $1\frac{1}{6}$ to $1\frac{1}{4}$; ventral $1\frac{1}{2}$ to $1\frac{3}{5}$.

Brown, on back and upper surfaces each scale with slightly darker border. Head below, belly and abdomen whitish. About 7 or 8 vertical diffuse slightly dark band on back and sides, mostly as intensified dark edges to scales. Iris gray brown. Dorsals and caudal grayish, other fins paler. Anal and ventrals more or less whitish.

Ceylon, East Indies, Philippines, China, Riu Kiu, Queensland, Micronesia, Melanesia,

894

U. S. N. M., No. . Honolulu.
U. S. Fish Comm. (2574). Length
168 mm.

U. S. N. M., No. 6413. Riu Kiu.
William Stimpson. Length 130 mm.
As Holocentrum diadema.

U. S. N. M., No. 26813. Johnston I
Island.
Length 263 mm. Preopercle spine
 $1\frac{1}{8}$ times eye.

U. S. N. M., No. 52413. Apia, Samoa.
Bureau of Fisheries. Length 165 mm.

U. S. N. M., No. 52670. Hawaiian
Islands. Bureau of Fisheries
(2547). Length 288? mm, caudal
tips broken.

Polynesia. Known by its much more deeply emarginate or lunate caudal than in Lethrinus harak, also upper profile of snout slightly convex. The dark blotch at the end of the depressed pectoral is always with dark extending upwards and downwards, exactly as shown by Bleeker's figure. In small examples the caudal is less noticeably lunate.

Lethrinus reticulatus Valenciennes is based on an example but 100 mm. long. Head reddish, with 2 or 3 brown bands above the eye. Membranous border of opercle yellow. Body lighter than head, with irregular blackish spots. Rays of soft vertical fins finely marked with blackish streaks.

895

Holocentrus tiere Cuvier

Holocentrum tiere Cuvier, Hist. Nat. Poiss., vol. 3, p. 202, 1829 (type locality, Tahiti). — Lesson, Voy. Cochin, Zool., vol. 2, pt. 1, p. 221, pl. 25, 1830 (Matavai Harbor and Venus Point, Tahiti). — Günther, Cat. Fish. Brit. Mus., vol. 1, p. 45, 1859 (copied).

Holocentrus tiere Seale, Occas. Pap. Bishop Mus., vol. 4, no. 1, p. 24, 1906 (Tahiti). — Jordan and Seale, Bull. Bur. Fisher., vol. 25, p. 224, 1905 (1906) (Samoa). — Fowler, Bull. Bishop Mus., no. 22, p. 31, 1925 (Samoa), p. 37 (Tahiti); Mem. Bishop Mus., vol. 10, p. 99, fig. 18, 1928 (Tahiti, Marcus Island, Apia, types of Holocentrus verticalis and Holocentrus polynesiæ).

896

Perca holocentrus (Forster) Lichtenstein,
Descript. Animalium, Forster, p. 191, 1844
(type locality, Tahiti).

Holocentrum poecilopterus Bleeker,
Nat. Tijds. ned. Indië, vol. 7, p. (353)
356, 1854 (type locality, Cocos-Keeling
Islands); ~~Günther, Cat. Fish. Brit.~~
~~Mus., vol. 1, p. 32, 1859~~

~~Bleeker~~ Ned. Tijds. Dierk., vol. 4, p.
207, 1874 (Cocos-Keeling); Atlas
Ichth., vol. 9, pl. (6) 360, fig. 4, 1877.
— Fowler, Proc. Acad. Nat. Sci. Philadelphia,
p. 485, 1899 (type of Holocentrus polynesiae).
Holocentrum poecilopterus Günther, Cat.
Fish. Brit. Mus., vol. 1, p. 32, 1859
(compiled).

Holocentrus binotatum (not Duoy and Gaimard)
Bryan and Herre, Occas. Pap. Bishop
 Mus., vol. 2, no. 1, p. 128, 1902 (1903)
 (Marcus Island).

Holocentrus polynesiae Fowler, Proc. Acad.
 Nat. Sci. Philadelphia, p. 229, fig. 3, 1904
 (type locality, Thornton Island).

Holocentrus verticalis Seale, Occas. Pap.
 Bishop Mus., vol. 4, no. 1, p. 22, fig. 6, 1906
 (type locality, Tahiti).

Holocentrus microstomus (not Günther) Seale,
 Occas. Pap. Bishop Mus., vol. 4, no. 1, p. 24,
 1906 (Tahiti specimen).

caudal base and 4 or 5 more on
 latter, 2 above, 6? below, 6?
 predorsal, 2 rows on cheek; head
 naked, except cheeks and opercles;
 strong curved spine, curved down
 and back at suprascapula. Lateral
 line with large tubes, arborescent;
 scales finely ctenoid but ^{mostly} all now
 fallen so their structure omitted.
 D. VII - I, 10, I, third spine $2\frac{1}{5}$
 in total head length, first ray 2;

Depth $2\frac{3}{5}$ to 3; head $2\frac{3}{4}$ to $2\frac{4}{5}$, width 2 to $2\frac{1}{4}$. Snout $3\frac{4}{5}$ to 4 in head; eye 3 to 4, greater than snout or interorbital; maxillary reaches $\frac{1}{2}$ to $\frac{3}{4}$ in eye, expansion $1\frac{4}{5}$ to $1\frac{3}{5}$ in eye; interorbital 5 to $5\frac{2}{5}$, low, nearly level or only slightly concave; opercle with 2 rather small spines, upper little longer or 3 in eye; preopercular spine $1\frac{1}{8}$ to $1\frac{1}{3}$, reaches beyond gill opening. Gill rakers 6 + $1\frac{1}{2}$, lanceolate, $1\frac{1}{8}$ in gill filaments, which $2\frac{1}{3}$ in eye; 3 of upper and 4 lower rudimentary.

Scales 47 to 49 in lateral line to caudal base and 4 or 5 more on latter; 4 above, 8 or 7 below, 9 or 10 predorsal, 5 rows on cheeks. Scales with 2 or 3 low rudimentary short close set

26, 1911, p. 291 (Truk Group; Buwan).

¹/_m Snyder, Proc. U. S. Nat. Mus., vol. ,

1912, p. 500 (Kainawa). ¹/_m Herre and Montalban,

Philippine Journ. Sci., vol. 35, No. 4, Aug.

1927, p. 405, pl. 2, fig. 2 (Iba; Manila

Bay; Culapan; Bacon; Concepcion; Estancia;

Buntayan Island; Curigora; Camigaran;

Dumaguete; Surigao; Pagayan de Misamis;

Balabac Island; Luzon; Samar and

Caldera Bay; Sandakan, Borneo).

Lethrinus richardsonii Snyder, Cat. Fauna

Filipinas, vol. 1, 1895, p. 482 (Luzon, Manila).

Lethrinus ornatus (not Valenciennes) Evermann

and Seale, Bull. Bur. Fisher., vol. 26, 1906

(1907), p. 87 (Bulan).

median basal points; row of 23 to 25 apical denticles, largest median; circuli fine, basal, not extended apically.

D. XI, I, 13, I, third spine 3 to 3 ¹/₈ in head, third branched ray 2 ¹/₈ to 2 ¹/₅; A. IV, 9, I, third spine 1 ⁹/₁₀ to 2, second ray 1 ⁴/₅ to 2; caudal 1 ¹/₅? to 1 ²/₅, forked; least depth of caudal peduncle 3 ⁴/₅ to 4 ¹/₂; pectoral 1 ²/₃ to 1 ³/₅; ventral 1 ³/₄ to 1 ⁴/₅.

Brown, with 9 greenish olive longitudinal bands extending medially on each longitudinal row of scales, 3 above and 6 below lateral line. Fins dull brown. Iris light yellowish brown.

Polyura.

base and 4 more on latter; 6 or 7 above, 15 below, 9 predorsal. Scales with 13 to 17 basal radiating striae; 54 to 77 apical denticles, with 5 to 12 transverse series of basal elements and circuli fine.

D. I, 9, II, fifth spine $2\frac{1}{4}$ to $2\frac{1}{2}$ in head, sixth ray $2\frac{2}{5}$ to $2\frac{3}{5}$; A. III, 8, IV, third spine $2\frac{2}{5}$ to $2\frac{3}{4}$, first ray $2\frac{1}{8}$ to $2\frac{1}{4}$; caudal $1\frac{1}{5}$ to $1\frac{1}{4}$, forked; least depth of caudal peduncle 3 to $3\frac{1}{10}$; pectoral $1\frac{1}{4}$ to $1\frac{1}{3}$; ventral $1\frac{2}{3}$ to $1\frac{3}{4}$.

Brown, below or under surface whitish. Brown blotch on side, especially as dark blotch little less than eye below lateral line and just behind gill opening. Another further back at same level. Dark longitudinal band from snout tip to eye and back over postocular in young. Young also

U. S. N. M., No. 52411. Apia, Samoa.
Bureau of Fisheries. Length 148 to
193 mm. Three examples.

A. N. S. P., No. 23277. Thornton
Island. C. D. Voy. E. D. Cope.
Dried skin 280 mm long.
Type of Holocentrus polynesiae.

Lethrinus harak (not Forsk) Fowler,
Copeia, no. 58, June 18, 1918, p. 64
(Philippines); Proc. Acad. Nat. Sci.
Philadelphia, 1927, p. 251 (part; Philippines).

Depth $2\frac{3}{5}$ to $2\frac{7}{8}$; head $2\frac{3}{5}$ to $2\frac{7}{8}$,
width $2\frac{1}{10}$ to $2\frac{1}{4}$. Snout 2 to $2\frac{1}{2}$ in
head; eye 3 to $3\frac{1}{2}$, $1\frac{1}{8}$ to $1\frac{7}{8}$ in snout,
little greater than interorbital;
maxillary reaches $\frac{3}{4}$ to 1 in snout, length
 $2\frac{3}{5}$ to $2\frac{2}{3}$ in head; teeth uniserial,
canine, usually pair in front of each jaw
more or less canine like and posterior
teeth as 4 or 5 broadly subconic each
side; band of fine villiform teeth in
front of each jaw behind canines;
interorbital $3\frac{4}{5}$ to 4, slightly convex.
Gill rakers 5 + 5, low tubercles,
greatly less than gill filaments, which
 $\frac{1}{3}$ of eye.

Scales 47 in lateral line to caudal

901

Holocentrus lacteoguttatus Cuvier

Holocentrum lacteoguttatum Cuvier, Hist. Nat. Poiss., vol. 3, p. 214, 1829 (type locality, Sea of the Indies). — Weber, Siboga Exped., vol. 57, Fische, p. 183, 1913 (Manado; Lirung; Roma; Timor; Pepla Bai). — Weber and Beaufort, Fishes Indo Austral. Archip., vol. 5, p. 240, 1929 (Simalur, Manado, Talibabu, Roma, Timor, Rotti).

Holocentrus lacteoguttatus Jordan and Richardson, Bull. Bur. Fisher., vol. 27, p. 247, 1907 (1908) (Calayan). — Fowler, Copeia, no. 112, p. 82, November 20, 1922 (Hawaiian Islands); Bull. Bishop Mus., no. 22, p. 6, 1925 (Guam), p. 24 (Honolulu), p. 32 (Samoa), p. 37 (Tahiti). — Fowler and Ball, Bull. Bishop Mus., no. 26, p. 9, 1925 (Laysan, Johnston, Wake Islands). — Fowler and Bean, Proc. U. S. Nat. Mus., vol. 71, p. 14, 1927 (Tahiti). — Fowler, Bull. Bishop Mus., no. 38, p. 7, 1927 (Fanning, Baker, Laysan Islands); Mem. Bishop Mus., vol. 10, p. 100, fig. 19, 1928 (Honolulu, Laie, Oahu, Moiliili, Laysan).

Johnston, Wake, Rarotonga, Raiatea, Faté,
Tubuai, Makatea, Waiikiki, Makemo,
Mani, Kanai, Apiang, Society Islands,
types of Holocentrus gracilispinis and
H. gladiispinis; vol. 11, no. 5, p. 321,
1931 (Pearl and Hermes Reef; Honolulu).

Holocentrum punctatissimum Cuvier, Hist.
Nat. Poiss., vol. 3, p. 215, 1829 (type locality,
Strong Island, Carolines). — Lesson, Voy.
Cogitille, Zool., vol. 2, pt. 1, p. 219, 1830
(Aualan). — Bleeker, Nat. Tijds. Ned.
Indië, vol. 4, p. 246, 1853 (Cauer, Sumatra);
vol. 9, p. 284, 1855 (Manado, Celebes); vol. 10,
p. 359, 1856 (Ternate); Act. Soc. Sci.
Ind. Néerl., vol. 1, no. 3, p. 3, 1856
(Manado); vol. 1, no. 5, p. 4, 1856 (Amboina);
vol. 3, no. 4, p. 2, 1857-58 (Manado); Nat.
Tijds. Ned. Indië, vol. 13, p. 478, 1857
(Karangbollong, Java); vol. 15, p. 198, 1858
(Goram); vol. 18, p. 352, 1859 (Bawean);
vol. 19, p. 329, 1859 (Patjitan, Java), p.
333 (Karangbollong, Java); vol. 22, p. 99,
1860 (New Guinea). — Schmeltz, Cat.
Mus. Godeffroy, no. 2, p. 6, 1865 (Samoa);
no. 3, p. 6, 1866 (Samoa); no. 4, p. 12, 1869

(Samoa; Viti). — Bleeker, Nederl. Tijds. Dierk.,
vol. 4, p. 215, 1874 (Cocos, Bawean,
Sumatra, Celebes, Sangi, Ternate, Ceram,
Goram, Letti, ^{Atgas Schth. Dwa. Nederl., vol. 9, pl. (5) 359, fig. 2, 1877.} New Guinea). — Schmeltz,
Cat. Mus. Godeffroy, no. 7, p. 36, 1879
(South Seas). — Pöhl, Cat. Mus. Godeffroy,
no. 10, p. 30, 1884 (South Seas). — Elera,
Cat. Fauna Filipinas, vol. 1, p. 455, 1895
(Cebu). — Steindachner, Sitzs. Ber. Akad.
Wiss. Wien, vol. 115, pt. 1, p. 1375, 1906
(Upolu, Savaii).

Holocentrus punctatissimus Bleeker, Ned.
Tijds. Dierk., vol. 1, p. 254, 1868 (Wahai,
Ceram). — Jordan and Evermann, Bull. U.
S. Fish Comm., vol. 23, pt. 1, p. 162, 1903
(1905) (Hilo, Kailua, Honolulu, Samoa).
— Seale, Occas. Pap. Bishop Mus., vol.
4, no. 1, p. 24, 1906 (Tubuai, Rarotonga,
Fate, Makatea). — Jordan and Seale,
Bull. Bur. Fisher., vol. 25, p. 224, 1905
(1906) (Apia; Pago Pago). — Jordan and
Dickerson, Proc. U. S. Nat. Mus., vol. 34,
p. 607, 1908 (Suva). — Kendall and
Goldsborough, Mem. Mus. Comp. Zool.,
vol. 26, p. 265, 1911 (Makemo). — Kendall

and Radcliffe, Mem. Mus. Comp. Zool.,
vol. 35, p. 94, 1912 (Easter Island). —
Snyder, Proc. U. S. Nat. Mus., vol. 42,
p. 496, 1912 (Okinawa). — Rendahl,
Nat. Hist. Juan Fernandez and Easter
Island, Shottsberg, vol. 3, Zool. pt. 1, p.
63, 1921 (Easter Island). — Fowler
and Silvester, Mar. Pap. Carnegie Inst.,
p. 116, 1922 (Pago Pago).

Holocentrum argenteum Valenciennes,
Hist. Nat. Poiss., vol. 7, p. 502, 1831
(type locality, New Guinea). — Duoy
and Gaimard, Voy. Astrolabe, Zool.,
p. 677, pl. 14, fig. 2, 1834 (Port Dorey).
— Bleeker, Act. Soc. Sci. Ind. Néerl.,
vol. 3, no. 8, p. 1, 1857-58 (Amboina);
Nat. Tijds. Ned. Indië, vol. 16, p. 28, 1858
(Amboina). — Klunzinger, Verh. Zool.
Bot. Ges. Wien, vol. 20, p. 721, 1870
(Red Sea). — Bleeker, Nederl. Tijds.
Dierk., vol. 4, p. 208, 1874 (Amboina;
New Guinea). — Klunzinger, Fische
Roth. Meer., vol. 1, p. 80, 1884. —
Steindachner, Denks. Akad. Wiss. Wien, vol.
70, p. 492, 1901 (Honolulu; Laysan).

Holocentrum stercus muscarum Valenciennes,
Hist. nat. Poiss., vol. 7, p. 503, 1831
(type locality, Guam).

Holocentrum diploxyphus Günther, Proc.
Zool. Soc. London, p. 660, pl. 60, 1871
(type locality, Samoa Islands); Journ.
Mus. Godeffroy, vol. 4, — p. 97, 1875
(Samoa, Marshalls, Tahiti, Paumotu,
Aneiteum). — Peters, Monatsb. Akad.
Wiss. Berlin, p. 439, 1876 (Mauritius);
Trans. Roy. Soc. Arts Sci. Mauritius,
new ser., vol. 11, p. 52, 1883 (Mauritius).
— Boulenger, Ann. Mag. Nat. Hist., ser. 6,
vol. 20, p. 372, 1897 (Rotuma). — Waite,
Mem. Austral. Mus., no. 3, p. 187, 1897
(Funafuti, Ellice Islands).

Holocentrum diploxyphus Schmetz, Cat.
Mus. Godeffroy, no. 5, p. 21, 1874 (Savaii);
no. 7, p. 36, 1877 (Savaii). — Pöhl, Cat.
Mus. Godeffroy, no. 10, p. 30, 1884 (Savaii).

Holocentrus diploxyphus Fowler, Proc. Acad.
Nat. Sci. Philadelphia, p. 500, 1900
(Hawaiian Islands), p. 520 (Tahiti).

— Jenkins, Bull. U. S. Fish Comm., vol. 22, p. 441, 1902 (1903) (Honolulu). —
Snyder, Bull. U. S. Fish Comm., vol. 22, p. 1523, 1902 (1904) (Honolulu; Puako Bay; Laysan).

Holocentrus gladiispinis Fowler, Proc. Acad. Nat. Sci. Philadelphia, p. 225, fig. 1, 1904 (type locality, Tahiti).

Holocentrus gracilispinis Fowler, Proc. Acad. Nat. Sci. Philadelphia, p. 228, fig. 2, 1904 (type locality, Honolulu).

Depth $2\frac{2}{3}$ to 3; head $2\frac{4}{5}$ to 3, width $1\frac{5}{6}$ to 2. Snout $4\frac{2}{5}$ to $4\frac{7}{8}$ in head; eye $2\frac{2}{3}$ to 3, greater than snout or interorbital; maxillary reaches $\frac{1}{3}$ to $\frac{2}{5}$ in eye, expansion $2\frac{1}{4}$ to $3\frac{1}{4}$ in eye, length $2\frac{1}{3}$ to $2\frac{9}{10}$ in head; interorbital $3\frac{1}{4}$ to $3\frac{3}{4}$, low, slightly concave medially; opercular spines 2, small, upper longer or spines subequal, $3\frac{7}{8}$ to 5 in eye; preopercular spine $1\frac{4}{5}$ to $2\frac{1}{5}$ in eye. Gill rakers 5 to 7 + 11 or 12, of which 3 to 5 above and 3

below rudimentary, about $7/8$ of gill filaments, which 3 in eye.

Scales 44 to 47 in lateral line to caudal base and 2 more on latter; 4 above, 7 or 8 below, 7 predorsal, 5 rows on cheek. Scales with 2 short close set basal points; apical denticles 35 to 37 in row, median largest; circuli fine, not extended apically.

D. XI, 13, I, third spine $1\frac{2}{3}$ to $2\frac{1}{8}$ in head, second branched ray $1\frac{3}{5}$ to 2; A. IV, 8, I or IV, 9, I, third spine $1\frac{4}{5}$ to $1\frac{3}{5}$, second branched $1\frac{3}{5}$ to 2; caudal 1 to $1\frac{1}{3}$, forked; least depth of caudal peduncle $3\frac{2}{3}$ to $3\frac{7}{8}$; pectoral $1\frac{1}{4}$ to $1\frac{1}{3}$; ventral $1\frac{1}{3}$ to $1\frac{3}{5}$.

Brass brown, with silvery reflections. Ten pale or whitish longitudinal bands, medially on each scale row. Fins uniform pale brown. Spinous dorsal just above middle with small white blotch behind each spine. Iris white. Small examples all more or less dusted with darker or dusky.

Six examples. Mahinog, Camiguin Island. August 3, 1909. Length 45 to 90 mm.

1601. Soo Wan, East Formosa. January 29, 1910. Length 180 mm. Three examples. Tomahu Island. December 11, 1909. Length 38 to 55 mm.

Median dark brown predorsal line extending back to form dark edge along bases of both dorsals. Second dark brown line or narrow band from above snout, over eye and back toward ^{and below} bases of last dorsal rays. Third broader dark or blackish brown band from snout tip through eye, not wider than pupil, and following along median axis of trunk nearly to middle of caudal base, where round blackish brown blotch about size of pupil. Subbasally on abdomen close above anal base brown line and extending back along each side of caudal peduncle below. Iris silvery white, except as crossed by dark horizontal

909
U. S. N. M., no. 6967. Honolulu.
W. Pease. Length 109 mm.

U. S. N. M., no. 51065. Hawaiian
Islands. U. S. Fish Comm. Length 147 mm.

U. S. N. M., no. 51094. Hawaiian Islands.
U. S. Fish Comm. Length 148 mm.

U. S. N. M., no. 52199. Apia. U. S.
Bur. Fisher. Length 53 to 143 mm.
Five examples.

U. S. N. M., no. 55135. Laysan.
Albatross Collection. May 1909. Length 122
to 145 mm. Five examples.

U. S. N. M., no. 55292. Honolulu.
Albatross Collection. March 27, 1902.
Length 97 to 108 mm. Three examples.

U. S. N. M., no. 55296. Henshaw's
Pool, Hilo. July 16, 1901. Albatross
Collection. Length 60 to 75 mm. Seven examples.

U. S. N. M., no. 55297. Honolulu. U. S.
Fish Comm. Length 121 mm.

940

Depth 1 to $1\frac{1}{5}$; head $2\frac{1}{8}$ to $2\frac{1}{3}$, width $2\frac{1}{2}$ to $2\frac{3}{4}$,
Snout $1\frac{1}{3}$ to $1\frac{1}{2}$ in head; eye $2\frac{7}{8}$ to 5, $1\frac{7}{8}$ to $3\frac{2}{5}$
in snout, greater than interorbital in young
to $1\frac{1}{4}$ in interorbital with age; maxillary
4 to $4\frac{1}{2}$ in head; interorbital $3\frac{1}{2}$ to $4\frac{1}{8}$,
broadly convex, with broad low antero
supraorbital spine, scarcely evident
in young. Gill rakers 1 + 10, short,
clavate, 5 in gill filaments, which nearly
equal eye.

Scales all rough, close set, imbricated
narrowly.

D. VI to VIII, 39, I to 42, I, third
spine long and filamentous or sometimes
equals $1\frac{1}{2}$ to 2 times total length of fish,
usually shorter in adults; A. III, 34, I to
37, I, third spine $2\frac{3}{5}$ to 3 in total head
length, second ray $1\frac{1}{3}$ to $1\frac{2}{5}$; least depth
of caudal peduncle 3 to $3\frac{1}{4}$; caudal
emarginate, $1\frac{1}{3}$ to $1\frac{1}{2}$; pectoral $1\frac{2}{5}$ to $1\frac{1}{2}$;

910

U. S. N. M., no. 55435. Honolulu.
Bureau of Fisheries. Length 135 to 150
mm. Two examples.

U. S. N. M., no. 55467. Hawaiian
Islands. Bureau of Fisheries. Length
124 mm.

U. S. N. M., no. 65538. Easter Island.
Albatross Collection. Length 89 mm.

U. S. N. M., no. 65876. Mangareva,
Tuamotus. Albatross Collection.
Length 69 mm.

U. S. N. M., no. 65877. Makemo,
Tuamotus. Albatross Collection (05837,
05842). Length 101 to 110 mm.

U. S. N. M., no. 71840. Nafa, Okinawa,
Riu Kiu. Albatross Collection. Length
91 mm.

U. S. N. M., no. 87643. Tahiti.
J. M. Clemens. Length 74 to 88 mm.
Six examples, in poor preservation.

Zanclus centrocnathos Cuvier, Hist. Nat.
Poiss., vol. 7, 1831, p. 528. Near Equator
75° E. (from stomach of albicore);
Vanicolo (Ducy and Gaimard).

Chaetodon nudus Gray, Cat. Fish. Grenow.,
 vol. 2, 1854, p. 76. Indian Ocean.

Gonopterus moerens Gray, l.c., p. 77.
India.

Zanclus montousieri (Montousier)
Thiollière, Fauna Woodlark, 1857, p. 168.
Woodlark Island.

Zanclus ruthiae (Bryan, Ocean. Pap.
Bishop Mus., vol. 2, no. 4, 1905 (1906),
 p. 22, fig. 2. Honolulu.

U. S. N. M., no. 87644, Tahiti.
 J. M. Clemens. Length 78 to 85 mm.
 Two examples.

U. S. N. M., no. 89483. Hawaiian
 Islands. Otto Degener. Length 60 mm.

A. N. S. P., no. 14140. Tahiti.
 Dr. J. K. Townsend. Length 140 mm.
 Type of Holocentrus gladispinis.

A. N. S. P., no. 27271. Honolulu.
 U. S. Fish Comm. (14233). Length
 138 mm. Type of Holocentrus
gracilispinis. ~~Holocentrus~~

vol. 14, 1885, p. 251 (Manado, Celebes;
 Ternate; Rubi, New Guinea). — Day,
 Fauna British India, vol. 2, 1889, p. 13,
 fig. 4. — Vinciguerra, Spall. Giorn.
 Roma Sci. Biol., vol. 19 (2 series), 1890,
 p. 486 (Zanzibar). — Ishikawa and Watsuura,
 Prelim. Cat. Fish. Mus. Tokyo, 1897, p. 41.
 — Gatzow and Lentz, Abhand. Senckenberg.
 Nat. Ges., band 21, Heft 1, 1897, p. 506
 (Zanzibar). — Steindachner, Abhand.
 Senckenberg. Nat. Ges., band 25, 1900, p. 421
 (Ternate and Batjan). — Jordan and Richardson,
 Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 269
 (Cagayanillo and Fuga). — Beaufort, Bijdr.
 Dierk. Amsterdam, deel 19, 1913, p. 125
 (Amboina). — Weber, Siboga Exped., band 65,
 1913, p. 325 (Karkaralang and Rotti). —
Fowler, Copeia, no. 58, June 18, 1918, p. 64
 (Philippines).

Holocentrus spinosissimus Schlegel

Holocentrum spinosissimum Schlegel,

Fauna Japonica, Poiss., pt. 1, p. 22,
~~1842~~ 1842 (type locality, Japan).

— Bleeker, Verh. Batavia Genoot.
 (Nal. Ichth. Japan), vol. 25, p. 10,
 1853 (reference). — Günther, Cat.

Fish. Brit. Mus., vol. 1, p. 41, 1859
 (copied). — Elera, Cat. Fauna Filipinas,
 vol. 1, p. 456, 1895 (Luzon, Cerrimao;
 Ilocos).

at edge in fork; Pectorals very pale clear yellow. Ventrals white externally, internally olive. No red about gill opening. Roof of mouth inside posteriorly red.

4899. Siasi Island market.

February 17, 1908. Length 360 mm.

Generally dull silvery, clouded with olive. Maxillary and adjoining membranes scarlet, also upper back part of mouth inside. Iris silvery, mottled with dusky. Dorsal clouded with dusky, blotch of pale vermillion on each membrane, becoming brighter posteriorly. Anal pale, with dusky and orange

~~Holocentrus spinosissimus~~ Schlegel

Holocentrus spinosissimus Schlegel, Fauna
Japonica, Poiss., pt. 1, ~~p. 22~~, pl. 8a, 1842.
~~type locality~~

Jordan and Snyder, Annot. Zool. Japon.,
vol. 3, p. 63, 1901 (Nagasaki; Riu Kiu).
— Jordan and Fowler, Proc. U. S. Nat.
Mus., vol. 26, p. 13, fig. 3, 1902 (Wakanoura,
southern Japan). — Jordan, Tanaka, Snyder,
Journ. College Sci., Tokyo, vol. 33, p. 115,
1913 (Wakanoura; Misaki). — Jordan
and Thompson, Mem. Carnegie Mus., vol. 6,
no. 4, p. 239, fig. 17 (copied), September 1914
(Misaki). — Anonymous, Illustr. Jap.
Aquat. Plants and Animals, vol. 1, pl. 23,
fig. 3, 1931.

— Izuka and Matsumura, Cat. Zool. Spec. Tokyo
Mus., Vertebr., p. 162, 1920 (Okinawa).

~~Holocentrum spinosissimum Bleeker, Verh.
Batav. Genoot. (Nal. Dierk. Japan), vol. 25,
p. 10, 1853 (reference). — Günther, Cat.~~

~~Fish. Brit. Mus., vol. 1, p. 41, 1859 (copied).~~

— Elera, Cat. Fauna Filipinas, vol. 1, p. 456,
1895 (Luzon, Cuzimanac, Ilocos).

Holocentrus spinosissimus Schlegel

Holocentrum spinosissimus Schlegel, Fauna
Japonica, Poiss., pt. 1, p. 22, pl. 8a, 1842.
(type locality, Nagasaki). — Bleeker,
Verh. Batav. Genoot. (Ned. Schth. Japan),
vol. 25, p. 10, 1853 (reference). —
Günther

Depth $2\frac{2}{5}$; head 3, width 2. Snout 4 in head from snout tip; eye 4, subequal with snout, greater than interorbital; maxillary reaches $\frac{1}{3}$ in eye, expansion 2 in eye, length $2\frac{7}{8}$ in head from snout tip; interorbital 5, low, slightly convex. Gill rakers 7+11, of which 4 above and 3 below rudiments; equal gill filaments, which 2 in eye.

Scales 41 in lateral line to caudal base and 3 more on latter; 4 above, 8 below, 7 predorsal, 4 rows on cheeks. Scales with 2 or 3 low, short, close set basal points; row of 20 to 22 apical points, median enlarged; circuli very fine, basal, not extended apically.

Depth $2\frac{2}{5}$ to $2\frac{2}{3}$; head $2\frac{1}{2}$ to $2\frac{2}{3}$, width $2\frac{1}{8}$ to $2\frac{3}{5}$. Snout $1\frac{3}{4}$ to $2\frac{1}{10}$ in head; eye $3\frac{1}{4}$ to $5\frac{1}{8}$, $1\frac{1}{2}$ to 3 in snout, 1 to $1\frac{2}{3}$ in interorbital; maxillary reaches nearly opposite front eye edge, length 2 to $2\frac{1}{4}$ in head; lips broad, coriaceous; teeth in broad villiform bands in jaws, anteriorly outer row enlarged and conic, with 4 front ones above and below canine-like and each side posteriorly third or fourth teeth from last enlarged or robust but not molars as their ends broad conic points; interorbital $3\frac{1}{5}$ to $3\frac{1}{2}$, broadly convex; naked region of head finely rugose striate. Gill rakers 6 + 8, short, low, broad tubercles, about $\frac{2}{3}$ of gill filaments.

Scales 43 to 46 in lateral line to caudal base and 1 to 4 more on latter;

915

D. XI, I, 13, I, third spine $2\frac{1}{4}$ in total head length, second branched ray $1\frac{2}{3}$; A. IV, 9, I, third spine $1\frac{1}{2}$, second branched ray $1\frac{2}{5}$; caudal $1\frac{2}{5}$, well forked, lobes broad, rounded; least depth of caudal peduncle $3\frac{1}{2}$; pectoral $1\frac{2}{5}$; ventral $1\frac{1}{3}$.

Brown, slightly paler below. Each row of scales longitudinally with median more or less golden brown band, due largely to slightly paler edges of each scale. Iris brownish. Fins uniform pale brown.

Japan.

Case 179

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Lethrinus kallopterus Bleeker

Lethrinus kallopterus Bleeker, Act. Soc.
Sci. Ind. Néerl. (Visch. Manado), vol. 1,
1856, p. 47. Manado, Celebes. $\frac{1}{m}$ Günther,
Cat. Fishes Brit. Mus., vol. 1, 1857, p. 460
(compiled). $\frac{1}{m}$ Bleeker, Atlas Ichth. Ind.
Néerland., vol. 8, 1876-77, p. 113, pl. (73)
351, fig. 3 (Celebes, Batjan, New Guinea).
 $\frac{1}{m}$ Herre and Montalban, Philippine Journ.
Sci., vol. 33, no. 4, 1927, p. 408, pl. 2, fig. 3
(Tablas Island). $\frac{1}{m}$ Fowler, Mem. Bishop
Mus., vol. 10, 1928, p. 216 (compiled).

Lethrinus amboinensis (not Bleeker)

Jordan and Seale, Bull. Bur. Fisher., vol.
25, 1905⁽¹⁹⁰⁶⁾, p. 270 (Apia, Samoa). $\frac{1}{m}$ Fowler,
Mem. Bishop Mus., vol. 10, 1928, p. 216
(Apia example).

U. S. N. M., No. 6525. Semoda.
William Stimpson. Length 207 mm.

orange violet, which also extends on
 border of soft dorsal. Anal reddish.
 caudal violet.

Richardson says of Lethrinus unaturnus:
 This fish, judging from Mr. Reeves's
 figure, scarcely differs from the
 preceding in external form, and it
 may actually be the same species in
 its spawning dress, but the Chinese
 fishermen give it another designation,
 which is here translated as a provisional
 specific name. Naked parts of head
 chestnut brown, and tinge of same along
 back. Face banded with purple, but
 with addition of stripe from eye along
 upper preorbital edge to middle of jaw.
 Each scale down level with under
 pectoral edge with round celadine green,
 passing into lavender purple. Vertical
 fins aurora red, with purplish tint

917

Holocentrus xantherythrus Jordan and
Evermann

Holocentrus xantherythrus Jordan and
Evermann, Bull. U. S. Fish Comm., vol. 22,
p. 175, 1902 (1903) (type locality, Honolulu;
Kailua). — Snyder, Bull. U. S. Fish
Comm., vol. 22, p. 523, 1902 (1904) (Honolulu).
— Jordan and Evermann, Bull. U. S. Fish
Comm., vol. 23, pt. 1, p. 164, pl. 9, 1903 (1905)
(Honolulu; Kailua). — Fowler, Copeia,
no. 122, p. 82, November 20, 1922
(Hawaiian Islands); Mem. Bishop
Mus., vol. 10, p. 101, 1928 (Honolulu,
Kailua, Hilo, Pago Pago; type; type of
Holocentrus zapyrus); vol. 11, no. 5,
p. 322, 1931 (Honolulu).

Holocentrus xantherythrus Fowler,
Proc. Acad. Nat. Sci. Philadelphia,
p. 225, 1904 (paratype).

Holocentrus zapyrus (Jordan and Evermann)
Brigam, Decad. Pap. Bishop Mus., vol. 2,
no. 2, p. 18, 19, 1903 (1904) (type locality,
Kailua) (no description).

Depth $2\frac{2}{3}$ to $2\frac{4}{5}$; head $2\frac{3}{5}$ to $2\frac{2}{3}$, width 2 to $2\frac{2}{5}$. Snout $3\frac{1}{5}$ to 4 in head; eye 3 to $4\frac{1}{5}$, greatly exceeds snout or interorbital; maxillary row $\frac{1}{3}$ to $\frac{2}{5}$ in eye, expansion $1\frac{2}{3}$ to $2\frac{3}{4}$ in eye, length $2\frac{1}{4}$ to 3 in head; interorbital 5 to $5\frac{1}{2}$, low, concave medially; 2 opercular spines, upper much longer or 2 to 3 in eye; preopercular spine $1\frac{1}{5}$ to 2. Gill rakers 7+13, lanceolate, $1\frac{1}{6}$ in gill filaments, which $2\frac{1}{4}$ in eye.

Scales 45 to 47 in lateral line to caudal base and 4 or 5 more on latter; 4 above, 9 below, 8 or 9 predorsal, 5 rows on cheeks. Scales with 2 or 3 small, low, close set median basal points; row of 24 or 25 apical denticles,

8140. Alibijaban Island, Ragay Gulf,
Luzon. March 6, 1909. Length 418 mm.

21838 and 21839. Atulayan Bay,
Luzon. June 17, 1909. Length 54 to 78 mm.

5793. Baganga Bay, Mindanao. May
13, 1908. Length 222 mm.

6500. Balikias Bay, Luzon. July 17, 1908.
Length 278 mm.

8690. Batay Island, Luzon. June 3, 1909.
Length 389 mm.

6742. Beach at village near Chase Head,
Endeavor Strait, Palawan. December 22, 1908.
Length 98 mm.

8960. Between Paron and Jesus Points,
Albay Gulf, Luzon. June 21, 1909. Length 580 mm.

8619 to 8620. Biri Channel. June 1, 1909.
Length 250 to 294 mm.

14504. Biri Channel. June 2, 1909.
Length 238 mm.

median largest; circuli very fine, basal, not extended apically.

D. XI, I, 13, I, third spine $2\frac{1}{4}$ to 3 in total head length, first branched ray $2\frac{1}{8}$ to $2\frac{1}{4}$; A. IV, 9, I, third spine $1\frac{5}{6}$ to 2, first branched ray $1\frac{7}{8}$ to 2; caudal $1\frac{1}{2}$ to $1\frac{7}{8}$?, forked, lobes pointed; least depth of caudal peduncle 4 to $4\frac{3}{4}$; pectoral $1\frac{3}{4}$ to 2; ventral $1\frac{3}{4}$ to $1\frac{7}{8}$.

Brown, little paler to whitish below. About 10 longitudinal pale to whitish bands, extending medially along each row of scales and tapering or narrowing posteriorly as scale rows converge at caudal peduncle. Fins pale, with more or less pale or light yellow tinge.

tip of the fin.

Lethrinus elongatus is described very briefly. As compared with Lethrinus variegatus, with the body long and the snout more pointed. Body gray green on back, white below. Fins red, dorsal with blue spots. Length 305 mm.

Lethrinus semicinctus is described as elongate. Face reddish, back brown, below white. Ten or twelve longitudinal lines on flanks, formed as row of black spots, more distinct above lateral line. Opposite first dorsal rays on middle of side large black spot. Back crossed by six narrow blackish bands, indistinct below lateral line and form blackish semicircles. Fins reddish. Length 200 mm.

Hawaiian Islands.

83

figure of Lethrinus harab shows the dark lateral blotch only one scale in width and on the second row of scales below the lateral line. Some preserved specimens show each scale with a distinct pale or light median spot. Others are quite slender and greatly like Lethrinus leptanemus in profile line. My specimens all agree in the size of the large dark lateral blotch and though it is often extended beyond the tip of the depressed pectoral fin it usually is close up with the lateral line, sometimes even on the row of scales. I have seen no examples like Lethrinus atkinsoni Seale. At least one example (9203) has the black lateral blotch over the posterior half of the depressed pectoral, one row of scales below the lateral line, but not extending beyond the

U. S. N. M., No. 50635. Honolulu.
Bureau of Fisheries. Length 150 mm.
Type.

U. S. N. M., No. 51138. Hawaiian
Islands. Bureau of Fisheries.
(04939). Length 167 mm.

U. S. N. M., No. 55295. Hawaiian
Islands. Bureau of Fisheries.
(02932). Length 153 mm.

U. S. N. M., No. 55298. Hawaiian
Islands. Bureau of Fisheries.
(04244, 04978, 04980). Length
81 to 150 mm.

U. S. N. M., No. 55519. Hilo.
Bureau of Fisheries (03486).
Length 244 mm.

9103^{to}, 9104⁵. Gigoro Point, Dinapundan Bay, Samar Island. July 28, 1909.

Length 290? to 320 mm.

13511. Gomomo Island. December 3, 1909.

Length 208 mm.

8992. Gubat Bay, Luzon. June 23, 1909.

Length 350 mm.

20514. Gujilugan. April 2, 1908.

Length 48 mm.

9254. Inamucan Bay, Mindanao.

August 8, 1909. Length 248 mm.

9263, 19279, 19579 to 19581. Inamucan Bay.

August 9, 1909. Length 60 to ²⁴⁷ mm.

^{5137 (D. 5172).} Jolo Light, E., 24.75 miles (6°03'15"N., 120°35'30"E).

March 5, 1908. Length 273 mm.

19382. Jolo market, Panay. March 28, 1908. Length 192 mm.

4857. Jolo market. February 12, 1908.

Length 257 mm.

5737. Generale Island, Capunuypugan Point, east coast Mindanao. May 9, 1908.

Length 275 mm.

922

Holocentrus macropus Günther

Holocentrum macropus Günther, Cat. Fish. Brit. Mus., vol. 1, p. 31, 1859 (type locality, Isle de France [= Mauritius]). — Bleeker, Rés. Poiss. Madagascar, Pollen et Van Dam, pt. 4, p. 86, 1874 (reference). — Sauvage, Hist. Nat. Madagascar, Poiss., p. 39, pl. 6, fig. 3, 1891 (type).

Depth $3\frac{1}{2}$; head $3\frac{3}{5}$. Snout 4 in head from snout tip; eye 3, greatly exceeds snout or interorbital; maxillary reaches $\frac{3}{4}$ in eye, expansion $2\frac{1}{4}$ in eye, length $2\frac{1}{2}$ in head from snout tip; interorbital $6\frac{1}{4}$, low; preopercular spine $1\frac{7}{8}$ in eye; 2 small, close set opercular spines, lower little shorter.

Scales 52 in lateral line (with 3 more on base of caudal on figure); 4 above, 6 below, 4 rows on cheek.

D. XI, 15 (only 14 rays in soft dorsal on figure), third spine 2 in

total head length, second
 branched ray 2; A. IV, 9
 (IV, 11 on figure), third spine
 2, sixth ray $1\frac{7}{8}$; caudal
 (damaged) forked; least depth
 of caudal peduncle 4; pectoral
 ray 15, fin broken; ventral
 rays I, 7, spine 2.

Red with deeper colored
 longitudinal bands. Length 230
 mm. (Günther; Sauvage.)

Mauritius.

Dentex variabilis (Ehrenberg) Valenciennes,
Hist. Nat. Poiss., vol. 6, 1830, p. 241. Red
Sea.

Synagris variabilis Günther, Cat.
Fishes Brit. Mus., vol. 1, 1859, p. 376
(compiled).

Dentex fasciatus (Ehrenberg) Valenciennes,
Hist. Nat. Poiss., vol. 6, 1830, p. 242.
Red Sea.

Depth $2\frac{1}{2}$; head 3, upper profile oblique.
Snout $2\frac{1}{4}$ in head from snout tip; eye
4, $1\frac{3}{4}$ in snout; maxillary reaches eye,
length $2\frac{1}{3}$ in head; preorbital depth
equals eye; lower jaw slightly longer;
4 canines in front of each jaw;
interorbital low; preopercle edge entire.

Scales 60 in lateral line (58 on figure),
6 above, 12 below, 14 rows on cheeks of
which 4 rows on preopercle flange;
predorsal extend forward opposite front

Holocentrus brachypterus Poey

Holocentrus brachypterus Poey, Repert.
Hist. Nat. Cuba, p. 184, 1866 (type locality,
Cuba). — Jordan and Evermann, Bull.
U. S. Nat. Mus., no. 47, pt. 1, p. 852, 1896
(compiled). — Jordan, Evermann, Clark,
Rep. U. S. Comm. Fisher., 1928 (1930)
pt. 2, p. 236 (reference).

Depth $3\frac{1}{2}$ in total with caudal;
depth $3\frac{1}{2}$. Snout 4 in head;
eye 3; mouth moderate, maxillary
reaching middle of eye.

Scales 40.

D. XI, 13; A. IV, 8; soft dorsal
and anal not pointed; caudal
lobes equal.

Carmine. Longitudinal rosy
streaks along scale rows.
Pale band along spinous dorsal.
No white band on cheeks.

(From Poey.)

Cuba. A doubtful and
incompletely described species.

925

Holocentrus caudimaculatus Rüppell

Holocentrus caudimaculatus Rüppell, Neue Wirbelth., Fische, p. (97) 103, 1835 (type locality, Red Sea; on Rüppell 1828).

— Jordan and Seale, Bull. Bur. Fisher., vol. 25, p. 223, 1905 (1906) (Apia). —

Jordan and Starks, Ann. Carnegie Mus., vol. 11, nos. 3-4, p. 447, November 5, 1917 (Ceylon). —

Fowler, Bull. Bishop Mus., no. 22, p. 32, 1925 (Samoa); Mem. Bishop Mus., vol. 10, p. 98, 1928 (type of

Holocentrus rubellio [not Holocentrus bowiei], Samoa, Apia, Papeé, Apiang; vol. 11, no. 5, p. 321, 1931 (reference).

Holocentrum caudimaculatum Günther,
Cat. Fish. Brit. Mus., vol. 1, p. 41, 1859
(compiled).

— Steindachner, Verh. Zool. Bot. Ges. Wien,
pt. 1, p. 71, 1861 (no locality). — Schmeltz,
Cat. Mus. Godeffroy, no. 2, p. 6, 1865
(Samoa). — Kner, Reise Novara, Fische,
p. 8, 1865 (Java; Madras). — Playfair,
Proc. Zool. Soc. London, p. 855, 1867
(Seychelles). — Klunzinger, Verh.
Zool. Bot. Ges. Wien, vol. 20, p. 724, 1870
(Red Sea). — Bleeker, Nederl. Tijds.
Dierk., vol. 4, p. 219, 1874 (Batu, Celebes,
Flores, Sangi, Ternate, Halmahera, Batjan,
Burru, Amboina, Banda, Timor); Res.
Poiss. Madagascar, Pollen et Van Dam,
pt. 4, p. 86, 1874 (reference). — Günther,
Journ. Mus. Godeffroy, vols. 2-3, pts. 5-6,
p. 95, 1874 (Pelew Islands, Apamana,
Gilbert Islands). — Day, Fishes of India,
pt. 2, p. 172, 1876. — Schmeltz, Cat. Mus.
Godeffroy, no. 6, p. 11, 1877 (Ponape).
^{Atlas Ichth. Ind. Néerl., vol. 9, pl. (2) 356, fig. 3, 1877.}
Bleeker, Arch. Néerl. Sci. Nat., vol. 13,
p. 37, 1878 (New Guinea). — Schmeltz,
Cat. Mus. Godeffroy, no. 7, p. 36, 1879
(Ponape). — MacLeay, Proc. Linn. Soc.

New South Wales, vol. 7, p. 351, 1882
 (New Guinea). — Klunzinger, Fische
Roth. Meer., vol. 1, p. 79, 1884. —
Steindachner, Abhand. Senckenberg. Ges.,
 vol. 25, p. 426, 1900 (Ternate); Vitzs.
Ber. Akad. Wiss. Wien, vol. 115, pt. 1, p.
 1374, 1906 (Hawaii). — Seale and Bean,
Proc. U. S. Nat. Mus., vol. 33, p. 241, 1907
 (Zamboanga). — Pellegrin, Bull. Soc.
Zool. France, vol. 39, p. 224, 1914 (Diego
 Suarez, Madagascar). — Weber and
Beaufort, Fishes Indo Austral. Archip.,
 vol. 5, p. 247, 1929 (Simalur, Lombok,
 Flores, Banda).

Holocentrus spinifer (not Forsk.) Rüppell,
Atlas Reise nördl. Afrika, p. 86, pl. 23, fig.
 1, 1828 (part).

Holocentrus spiniferum Cuvier, Hist. Nat.
Poiss., vol. 3, p. 206, 1829 (Koseir, Red Sea).
Valenciennes, Hist. Nat. Poiss., vol. 7,
 p. 498, 1831 (Mauritius; Ulea).

* Holocentrum spinifera

Holocentrus ruber (not Forsk.) Bennett,
Fishes of Ceylon, p. 4, pl. 4, 1828 (Ceylon).

Holocentrum leonoides Bleeker, Journ.

Indian Archip.^{vol. 3,} p. 69, 1849 (type locality,
Macassar, Celebes); Verh. Batav. Genoot.
(Perc.), vol. 22, p. 54, 1849 (Macassar);
Nat. Tijds. Ned. Indië, vol. 5, p. 319,
1853 (Amboina); vol. 6, p. 89, 1854
(Banda, heira); vol. 8, p. 296, 1855
(Ternate), p. 306 (Batoe); vol. 9, p. 492,
1855 (Batjan); vol. 11, p. 94, 1856 (Banda),
p. 385 (Kajeli, Buru); vol. 13, p. 56, 1857
(Kajeli), p. 371 (Sangi); vol. 16, p. 28, 1858
(Amboina); vol. 17, p. 130, 1858-59
(Alapoepoe, Timor); vol. 22, p. 111, 1860
(Buru); Act. Soc. Ind. Néerl., vol. 1, no. 3,
p. 3, 1856 (Manado); vol. 1, no. 5, p. 4, 1856
(Amboina); vol. 2, no. 7, p. 3, 1857 (Amboina);
Versl. Akad. Wet. Amsterdam, vol. 15,
p. 20, 1863 (Hitu, Amboina).

vol. 6, no. 2, p. 3, 1859 (Doreh, New Guinea);
Holocentrus leonoides Bleeker, Nat. Tijds. Ned.
Indië, vol. 9, p. 106, 1855 (Sahu, Halmahera);
Nederl. Tijds. Dierk., vol. 1, p. 249, 1863
(Flores), p. 267 (Atapupu, Timor).

729

Holocentrus rubellio Seale, Ocear. Pap.
Bishop Mus., vol. 4, no. 1, p. 22, fig. 5, 1906
(type locality, Tahiti).

Depth $2\frac{3}{5}$ to $2\frac{2}{3}$; head $2\frac{1}{2}$ to $2\frac{3}{4}$,
width $2\frac{1}{5}$ to $2\frac{1}{4}$. Snout $3\frac{3}{5}$ to $3\frac{4}{5}$ in
head from snout tip; eye $3\frac{1}{8}$ to $3\frac{3}{4}$,
greater than snout in young to $1\frac{3}{4}$ in
snout with age, greater than interorbital;
maxillary reaches $\frac{1}{4}$ in eye in young,
to eye with age, expansion $1\frac{3}{4}$ to
 $2\frac{3}{4}$ in eye, length $2\frac{3}{4}$ to 3 in head
from snout tip; interorbital $5\frac{1}{4}$,
slightly concave; opercular spines 2,
upper larger and extends little more
posterior; preopercular spine $1\frac{2}{5}$ in
eye, with age $1\frac{2}{5}$ times eye. Gill
rakers 7 + 14, with 4 to 6 rudiments
above and below.

Scales 41 or 42 in lateral line to
caudal base and 4 more on latter; 4
above, 7 below, 7 predorsal, 5 rows on
cheek. Scales with 2 or 3 short median
basal points; 10 to 14 irregular marginal
denticles, with many apical pits; circuli
very fine.

930

D. XI, I, 13, I or XI, I, 14, I, third spine 2 to $2\frac{1}{10}$ in total head, second branched ray $1\frac{7}{8}$ to $2\frac{1}{8}$; A. IV, 9, I or IV, 10, I, third spine $1\frac{3}{5}$ to 2, first branched ray $1\frac{2}{5}$ to $1\frac{4}{5}$; caudal $1\frac{2}{5}$ to $1\frac{3}{5}$, forked; least depth of caudal peduncle $3\frac{7}{8}$ to $4\frac{1}{2}$; pectoral $1\frac{2}{5}$ to $1\frac{3}{5}$; ventral $1\frac{1}{3}$ to $1\frac{2}{3}$.

Pale brown. Iris whitish or pale. Whitish blotch, little smaller than pupil, on upper front surface of caudal peduncle behind soft dorsal. Fins pale brown.

Red Sea, India, Ceylon, East Indies, Micronesia, Polynesia. Greatly like Holocentrus spinifer in appearance,

10367. Tilig, Lubang Island.

July 14, 1908. Length 192 mm.

22186. Simane, Bisibisi Island.

September 23, 1909. Length 55 mm.

12701. Tara Island. December 14, 1908. Length 160 mm.

10367, 18876, 19144. Tilig, Lubang.

July 14-15, 1908. Length 150 to 190 mm.

9 examples. Torahu Island, tide pools. December 11, 1909. Length 43 to 63 mm.

15604. Tulayan Island. September 15, 1909. Length 182 mm.

7931 to 7933. Tuta Bay, Jolo Island. September 19, 1909. Length 139 to 188 mm.

7656. Ulugan Bay, Dyster Inlet. December 28, 1908. Length 235 mm.

931
but that species with but 5 scales
above the lateral line. The white
spot saddled on the upper surface
of the caudal peduncle behind the
soft dorsal base is also found, at
least traces of it, in alcoholic
specimens.

869
14595. Port Palupag. June 3.
1909. Length 30 mm.

220, 9243, 12587, 12590, 15645. Rapu
Rapu Island. June 22, 1909. Length
75 to 215 mm.

13366, 13368, 14782, 14783. Sablayan,
Mindoro Island. December 12, 1908.
Length 128 to 153 mm.

15638. Sablayan. December 13, 1908.
Length 153 mm.

16973. Subtan Island. November 8,
1908. Length 205 mm.

14682. Lango Point, Luzon. June
24, 1909. Length 175 mm.

12230. Santa Cruz Island, Marinduque.
April 24, 1908. Length 173 mm.

U. S. N. M., no. 5854; Zamboanga.
Dr. E. A. Mearns. August 1906. Length
290 mm.

U. S. N. M., no. 5244. Apia, Samoa.
Bureau of Fisheries. Length 111 to 158
mm. Six examples.

A. N. S. P., no. Apia, Samoa.
Bureau of Fisheries. Length to mm.
Two examples.

A. N. S. P., no. Santa Cruz,
Philippines. Rev. Joseph Clemens,
Length 190 mm.

~~U. S. N. M., no.
Dr. E. A. Mearns. Length 234 to 248 mm.
Two examples.~~

Family Zanclidae.

833

Body deep, elevated, strongly compressed. Caudal peduncle unarmed. Mouth small. Teeth in jaws, long, slender and brush like; palate edentulous. Solid thick bones on top of head form median frontal horn with age, not present in young. Preopercle unarmed. Branchiostegals 4. Pyloric coeca 14. Intestines long. Vertebrae $22\frac{1}{2}$, of which 13 caudal. Scales minute and rough. Dorsal single, spines 7, third and following prolonged as filaments; interspinous bone projects before dorsal. Anal like soft dorsal, long, front rays produced; small antrorse spine before anal. Caudal lunate. Pectoral short. Ventral pointed.

933

Holocentrus violaceus Bleeker

Holocentrum violaceum Bleeker, Nat.
Tijds. ned. Indië, vol. 5, p. (319, 320)
335, 1853 (type locality, Amboina);
Act. Soc. Ind. Néerl.; vol. 1, no. 5, p.
4, 1856 (Amboina); vol. 2, no. 7, p. 3,
1857 (Amboina); Nat. Tijds. ned.
Indië, vol. 17, p. 130, 1858-59
(Atapoepe, Timor). — Günther, Cat.
Fish. Brit. Mus., vol. 1, p. 43, 1859
(Amboyna). — Schmeltz, Cat. Mus.
Godeffroy, no. 3, p. 6, 1866 (Samoa). —
Kner, Sitzs. Ber. Akad. Wiss. Wien,
vol. 57, pt. 1, p. 296, 1868 (Kandavu,
Fiji). — Schmeltz, Cat. Mus. Godeffroy,
no. 4, p. 12, 1869 (Samoa; Viti). —
Bleeker, Ned. Tijds. Dierk., vol. 4,
p. 221, 1874 (Amboina; Timor); Atlas
Schth. Ind. Néerl., vol. 9, pl. 7 (1) 355, fig. 2, 1877.
¹ Schmeltz, Cat. Mus. Godeffroy, no. 7,
p. 36, 1879 (South Seas). — Macleay,
Proc. Linn. Soc. New South Wales,
vol. 7, p. 351, 1882 (New Guinea). —
Pöhl, Cat. Mus. Godeffroy, no. 10, p. 30,
1884 (South Seas). — Weber, Siboga
Exped., vol. 57, Fische, p. 182, 1913

(north west coast of Waigiu). — Weber
and Beaufort, Fishes Indo-Austral.
Archip., vol. 5, p. 246, 1929 (Waigiu).

Holocentrus violaceus Bleeker, Ned.
Tijds. Dierk., vol. 1, p. 268, 1863 (Atapupu,
Nimor). — Elera, Cat. Fauna Filipinas,
vol. 1, p. 456, 1895 (Iloilo, Panay, Cebu).
— Jordan and Seale, Bull. Bur.
Fishes., vol. 25, p. 223, 1905 (1906) (Samoa).
— Fowler, Bull. Bishop Mus., no. 22,
p. 32, 1925 (Samoa); Mem. Bishop
Mus., vol. 10, p. 102, 1929 (Tahiti,
Shortland, Samoa Islands); vol. 11,
no. 5, p. 322, 1931 (reference).

Depth $2\frac{2}{5}$ to $2\frac{1}{2}$; head $2\frac{1}{2}$ to $2\frac{4}{5}$, width 2 to $2\frac{1}{6}$. Snout $4\frac{1}{5}$ to $4\frac{2}{5}$ in head from snout tip; eye $2\frac{2}{5}$ to $3\frac{3}{5}$, greatly exceeds snout in young, less so with age, much greater than interorbital; maxillary reaches $\frac{2}{5}$ in eye, expansion $1\frac{4}{5}$ to $2\frac{1}{2}$ in eye, length $2\frac{1}{2}$ to $2\frac{2}{3}$ in head from snout tip; interorbital $5\frac{2}{5}$ to $5\frac{1}{2}$, low, level; 2 opercular spines, upper longer or $2\frac{1}{8}$ to $3\frac{1}{2}$ in eye; preopercular spine 1 to $2\frac{2}{5}$, extends far behind gill opening. Gill rakers $7+13$, lanceolate, $1\frac{1}{5}$ in gill filaments, which $2\frac{1}{5}$ in eye.

Scales 34 to 36 in lateral line to caudal base and 4 or 5 more on latter; 4 above, 8 below, 8 predorsal, 4 rows on cheeks.

Canis 29

Lethrinus atkinsoni Seale

99

Lethrinus atkinsoni Seale, Philippine Journ. Science, vol. 4, no. 6, 1909, p. 515, pl. 11. Balabac Island. ¹ Herre and Montalban, Philippine Journ. Science, vol. 33, no. 4, Aug. 1927, p. 412 (type).

Depth $2\frac{1}{2}$; head $2\frac{4}{5}$, upper profile obtuse. Snout $1\frac{9}{10}$ in head; eye $1\frac{2}{3}$, $1\frac{1}{2}$ in snout, impinging on upper profile; maxillary reaches $\frac{7}{8}$ to eye, length $2\frac{3}{5}$ in head; 4 large front canines in each jaw, laterals conic in front and large molars behind, each molar with longitudinal groove; behind canines patch of vomerine teeth; interorbital $3\frac{2}{5}$, slightly convex. Gill rakers 4 short, blunt, on lower branch of first arch, longest $\frac{1}{4}$ pupil.

Scales 47 in lateral line to caudal base; 6 above, 14 below; predorsal scales forward

Scales with 1 or 2 low close set medial short basal points; row of 23 to 25 apical denticles, median largest; circuli fine, basal, not extended apically.

D. XI, I, 13, I, edge of spinous fin largely entire or without notches, third spine $2\frac{1}{4}$ to $2\frac{2}{5}$ in total head, second branched ray $1\frac{2}{3}$ to $1\frac{4}{5}$; A. IV, 9, I, third spine $1\frac{3}{5}$ to $1\frac{2}{3}$, first branched ray $1\frac{1}{2}$ to $1\frac{3}{5}$; caudal $1\frac{2}{5}$, well forked, lobes broad, pointed; least depth of caudal peduncle $3\frac{1}{2}$ to 4; pectoral $1\frac{1}{3}$ to $1\frac{1}{2}$; ventral $1\frac{1}{3}$ to $1\frac{2}{5}$.

Dark brown above, paler below. Each scale with vertical pale or whitish narrow bar or line. Each scale on cheeks with dark

65901 U.S.N.M. Uruu, Tonga Islands.
Bureau of Fisheries (08876). Length
186 mm.

84196 U.S.N.M. Cebu. Dr. F. Baker.
Length 279? mm.

84244 U.S.N.M. Zamboanga. Dr. F.
Baker. Length 138 mm. as Lutjanus
fulviflamma.

84260 U.S.N.M. Zamboanga. Dr. F.
Baker. Length 144? mm.

48621 A.N.S.P. Philippines. Commercial
Museum of Philadelphia. Length 125 mm?

52802 A.N.S.P. Calapan, Mindoro.
Rev. Joseph Clement. Length ~~144~~ 150 mm?

52801 A.N.S.P. Orion. May 11, 1923.
Rev. Joseph Clement. Length 125 mm.

median spot or blotch. Blackish blotch on upper hind edge of gill opening. Iris yellowish or gray brown. Fins all pale or light brownish, membranes of spinous dorsal dusky.

East Indies, Philippines, Melanesia, Polynesia. A very handsome species, readily known by its distinctive color pattern.

52288 U.S.N.M. Apia, Samoa.
Bureau of Fisheries (07747). Length
249 to 292 mm. 3 examples.

52384 U.S.N.M. Apia. Bureau of
Fisheries (07754). Length 39 to 280 mm.
5 examples.

56018 U.S.N.M. Jolo. Bureau of
Fisheries (4108). Length 229 mm.

56170 U.S.N.M. Bacu. Bureau of
Fisheries (3316). Length 58 to 67 mm. 2 examples.

57960 U.S.N.M. Zamboanga. Dr. E. A.
Mearns. Length 65 mm.

58018 U.S.N.M. Zamboanga. Dr. E. A.
Mearns. Length 250 to 295 mm. 2 examples.

58992 U.S.N.M. Bacu. Bureau of
Fisheries (3970). Length 101 mm.

65899 U.S.N.M. Kusaie, Carolines.
Bureau of Fisheries (08935). Length 242 mm.

65900 U.S.N.M. Suva, Fiji. Albatross
Collection (A 143). Length 276 mm.

7291. Paluan Bay, Mindoro.
December 11, 1908. Length 200? mm.

6741. Port Matalvi, Luzon.
November 2, 1908. Length 160 mm.

22672. Santiago River, Pagapas
Bay, Luzon. February 20, 1909.
Length 157 mm.

22720. Varadero Bay, Mindoro,
in small stream at head of bay.
July 24, 1908. Length 155 mm.

This specimen with small
isopod crustacean attached
externally to side of abdomen.

head and abdomen with pale lilac to violet and greenish reflections, with silvery tints. Iris whitish, with some gray tints. Behind tip of opercle flap at humeral region vertical dusky brown blotch little more than pupil, also variable diffuse dusky brown blotch at caudal base, never larger than eye, sometimes absent. Fins all pale.

East Indies, Philippines.

U. S. N. M., No. 52385, Samoa.
Bureau of Fisheries. Length 60 to 180
mm. Eight examples.

A 1326. Tifu Bay, Bouru Island.
December 10, 1909. Length 233 mm.

A 1179 and A 1180. Same Road, Gikolo
Island. December 1, 1909. Length 300 to 310 mm.

19327, 20233, 20372. Sandakan market,
Borneo. March 2, 1908. Length 77 to 85 mm.

A 1522, 9954. Din Can Island, Yulu Sea.
January 7, 1910. Length 210 to 229 mm.

A 1613. Tafa, Kiri Kiri Islands. February
7, 1910. Length 318 mm.

20523.

Specimen with abnormal mandible. Length 121 mm.

30525 U.S.N.M. New Guinea.

Australian Museum. Length 283 mm.

30549 U.S.N.M. New Guinea.

Australian Museum. Length 242 mm.

51977 U.S.N.M. Negros, Philippines.

Dr. Bashford Dean. Length 99 to 163 mm.

2 examples.

940

Holocentrus sancti-pauli Günther

Holocentrum sancti-pauli Günther,
Rep. Voy. Challenger, vol. 1, pt. 6, p. 4,
pl. 1, fig. 11, 1880 (type locality, St.
Paul's Rock).

Holocentrus sancti-pauli Jordan and
Evermann, Bull. U. S. Nat. Mus., no. 47,
pt. 1, p. 853, 1896 (copied). — Jordan, Evermann,
Clark, Rep. U. S. Com. Fisher, 1928 (1930), pt. 2, p. 236 (reference).

Depth $2\frac{3}{5}$; head $3\frac{1}{2}$. Snout
 $3\frac{4}{5}$ in head from snout tip;
eye $3\frac{1}{4}$, slightly greater than
snout, greater than interorbital;
maxillary reaches $\frac{1}{3}$ in eye,
expansion $1\frac{4}{5}$ in eye, length $2\frac{3}{4}$
in head from snout tip;
interorbital about $4\frac{4}{5}$, low;
preopercular spine $1\frac{1}{2}$ in eye;
opercle with large strong spine
above, single.

Scales 48 in lateral line to
caudal base and 4 more on latter;
4 above, 8 below, 6 rows on cheek.

941

D. XI, 15, third spine $1\frac{7}{8}$ in
total head length, third ray
 $1\frac{1}{4}$; A. IV, 10, second spine
 $2\frac{1}{10}$, second ray $1\frac{4}{5}$; caudal
1, upper lobe longer, forked;
least depth of caudal peduncle
 $3\frac{3}{4}$; pectoral $1\frac{2}{3}$, rays I, 12;
ventral rays I, 6, fin $1\frac{1}{4}$ in
total head length.

Uniform red. Length 407
mm. (Günther.)

St. Paul's Rocks, Mid
Atlantic.

extend forward half way in eye; 3 rows on cheeks (figure with 5 rows between lower eye edge and angle of preopercle ridge), preopercle flange naked.

D. X, 9, I, spines uniformly high or last but very slightly longer than first, $2\frac{1}{2}$ in head, first ray $1\frac{7}{8}$, eighth ray $1\frac{2}{3}$; A. III, 8, I, third spine $2\frac{3}{4}$, seventh ray $1\frac{7}{8}$; caudal 1, deeply emarginate; least depth of caudal peduncle $2\frac{1}{2}$; ventral 1; pectoral $3\frac{1}{3}$ in combined head and body to caudal base.

Uniform. Bases of membranes of dorsals and anals each with small dark spot, also each fin with dark submarginal line. Dark area on second ventral ray medially. Length 270 mm. (Jordan and Evermann.)

Holocentrus spinifer (Forskål)

942

Sciaena spinifera Forskål, Descript.
Animal., pp. ~~XII~~^{XII}, 49, 1775 (type locality,
Ojedda, Red Sea). — Bonnaterre,
Nabl. Encyclop., p. 120, 1788 (copied). —
Gmelin, Syst. Nat. Linn., ^{vol. 1,} p. 1302, 1789.
(Arabia). — Walbaum, Artedi Pisc., vol.
3, 317, 1792 (copied).

Perca spinifera Schneider, Syst. Ichth.
Bloch, p. 806, 1801 (copied). Lacépède, Hist. Nat.
Poiss., vol. 4, pp. ^{396,} 418, 1802 (Arabia).

Holocentrus spinifer Rüppell, Neue
Wirbelth., Fische, p. 97, pl. 25, fig. 1, 1835
(Ojedda) [not Atlas 1828].

— Martens, Verh. Zool. Bot. Ges. Wien,
vol. 16, p. 378, 1866 (Red Sea). — Fowler,
Proc. Acad. Nat. Sci. Philadelphia, p.
483, 1899 (Thornton Island); p. 526, 1900
(Samoa). — Jordan and Evermann, Bull.
U.S. Fish Comm., vol. 23, pt. 1, p. 161, pl. 8,
1903 (1905) (Honolulu; Samoa). — Seale,
Occas. Pap. Bishop Mus., vol. 4, no. 1, p. 20,
1906 (Fate; Shortland; Raiatea). —
Jordan and Seale, Bull. Bur. Fisher.,

vol. 25, p. 223, 1905 (1906) (Samoa). —
 Kendall and Goldsborough, Mem. Bishop
 Mus., vol. 26, p. 265, 1911 (Makemo, Tuamotus).
 — Fowler, Bull. Bishop Mus., no. 22, p. 32,
 1925 (Samoa). — Fowler and Ball, Bull.
 Bishop Mus., no. 26, p. 9, 1925 (Johnston
 and Wake Islands). — Whitley, Rec.
 Austral. Mus., vol. 16, no. 1, p. 11, October
 7, 1927 (Michaelmas Cay, Queensland). —
 Fowler, Mem. Bishop Mus., vol. 10, p. 103,
 1929 (Samoa, Oahu, Fanning, Hawaii,
 Tuamotus, Johnston, Honolulu, Wake,
 Faté, Mangareva, Raiatea, Shortland,
 Apiang, Society, Thornton Islands, Pago
 Pago); vol. 11, no. 5, p. 322, 1931 (Honolulu).

Holocentrum spiniferum ~~Whitley, Rec. Austral. Mus., vol. 16, no. 1, p. 11, October 7, 1927 (Michaelmas Cay, Queensland).~~
~~Cat. Fish. Brit. Mus., vol. 1, p. 39, 1859 (Red Sea, Louisiades; no locality).~~

— Bleeker, Verh. Batav. Genoot. (Nal.
 Ichth. Bengal.), vol. 25, 1853, p. 34
 (reference). — Günther, Cat. Fish. Brit.
 Mus., vol. 1, p. 39, 1859 (~~Red Sea~~ Red Sea,
 Louisiades; no locality).
 — Schmetz, Cat. Mus. Godeffroy, no. 2, p.
 6, 1865 (Samoa). — Kner, Reise Novara,
 Fische, p. 7, 1865 (no locality). — Schmetz,
 Cat. Mus. Godeffroy, no. 3, p. 6, 1866

1166

scarlet below; on nuchal region center
of each ~~scale~~ more or less mottled
with dark brown or dusky; over side
occasional orange blotches less than a
scale in size. Top of head dark
smoky olive, becomes more or less
slaty as reticulations about orange
or brownish spots on side of head;
orange rather bright about eye with
reticulations purplish; lips and
inside mouth bright scarlet; chin
with pale tip; mandible pale scarlet;
iris dusky and silvery, also with
somewhat yellowish shades. Spinous
dorsal dusky scarlet, membranes

— Playfair, Proc. Zool. Soc. London, 1867, p. 855 (Veychellets); — Schmeltz, Cat. Mus. Godeffroy
(Samoa); no. 4, p. 12, 1869 (Samoa; Viti)
— Klunzinger, Verh. Zool. Bot. Gesell.
Wien, vol. 20, p. 725, 1870 (Red Sea). —
[Bleeker, Rés. Poiss. Madagascar, Pollen
et Van Dam, pt. 4, p. 86, 1874 (reference);
— Günther, Cruise of Curacao, p. 410, 1873
(Solomons).

Red. Tijds. Dierk., vol. 4, p. 205, 1874
(Cocos, Batu, Celebes, Batjan, Amboina,
Waigiu, Philippines). — Günther, Journ.
Mus. Godeffroy, vol. 2-3, pts. 5-6, p. 94,
1874 (Cavau, Louisiades, New Hebrides,
Solomons). — Streets, Bull. U.S. Nat. Mus.,
no. 7, p. 89, 1877 (Fanning). — Günther,
Rep. Voy. Challenger, vol. 1, pt. 6, p. 58, 1880
(Tongatabu). — Macleay, Proc. Linn.
Soc. New South Wales, vol. 7, p. 351, 1882
(New Guinea). — Peters, Trans. Roy.
Soc. Arts Sci. Mauritius, new ser., vol. 11,
p. 52, 1883 (Mauritius). — Klunzinger,
Fische Roth. Meer., vol. 1, p. 79, 1884. —
Pöhl, Cat. Mus. Godeffroy, no. 9, p. 30, 1884
(South Seas). — Meyler, An. Soc. Espan.
Hist. Nat. Madrid, vol. 14, p. 23, 1885
(North Celebes). — Sauvage, Hist. Nat.
Madagascar, Poiss., p. 30, ^{pl. 4, fig. 1-a,} 1871 (Red Sea;
Mauritius).

obliquely downward and backward,
about 13 bars with last reaching
bases of last rays and extending
from outer half of first ray. Spinous
anal membranes with yellowish olive
shades, rayed fin with small blue
white spots about $\frac{1}{3}$ to $\frac{1}{2}$ size of
spots on dorsal and confined to basal
and front portions of fin. Caudal
without spots. Paired fins pale
vermilion, pectoral hyaline.

9349. Murcielagos Bay, Mindanao.
August 21, 1909. Length 500 mm. Body
olive gray, white below; scales above
with dark olive margins, turning to

— Elera, Cat. Fauna Filipinas, vol. 1, p.
456, 1895 (Luzon, Cavite, Naic, Batangas,
Masugbu, Mindoro). — Steindachner,
Sitzb. Ber. Akad. Wiss. Wien, vol. 115, pt. 1,
p. 1374, 1906 (Upolu). — Weber and Beaufort,
Fishes Indo Austral. Archip., vol. 5,
p. 235, 1929 (Simalur; Ambon).

6811[1728]. Gigoso Point, Quinapundan Bay, Samar. July 28, 1909. Length 179 mm. Top of head smoky purple, side much paler and with numerous rather obscure brownish spots; lower surface of head with dusky pink shades. Side of body olive to gray; scale rows below lateral line under its arch each with longitudinal pale streak, most distinct immediately behind depressed pectoral tip and nearly reaches caudal. Spinous dorsal olive, mottled with paler rounded spots, 3 on each membrane. Soft vertical fins vermilion, pale spots crossing dorsal base

Holocentrum leo Cuvier, Hist. nat. Poiss.,
vol. 3, p. 204, 1829 (type locality, Borabora;
Waigiu). — Lesson, Voy. Coquille, Zool.,
vol. 2, pt. 2, p. 222, 1830 (South Sea;
Borabora; Waigiu). — Valenciennes, Hist.
Nat. Poiss., vol. 7, p. 9, 1831 (Variety
Island, Vanicolo, Guam, Carolines).
Duoy and Gaimard, Voy. Astrolabe, Zool.,
vol. 31, p. 678, pl. 14, fig. 3, 1834 (Vanikoro).
— Bleeker, Nat. Tijds. Ned. Indië, vol. 7,
p. 355, 1854 (Cocos Islands); vol. 12, p.
230, 1856 (Batu); vol. 13, p. 383, 1857
(Batjan); Act. Soc. Sci. Ind. Néerl.,
vol. 1, no. 3, p. 3, 1856 (Manado); vol. 1,
no. 5, p. 74, 1856 (Amboina); vol. 2, no. 7,
p. 3, 1857 (Amboina).

— Valenciennes, Règne Animal, Cuvier, ed.
Ill., pl. 14, fig. 1, 1839.

— Guichenot, Notes Ile Réunion, vol. 2, p.
24, 1862. — Sauvage, Hist. nat. Madagascar,
Poiss., p. 28, pl. 12, fig. 6 (scale), pl. 15,
fig. 3, 1891 (type, Seychelles; Vanikoro;
Tongatabu; Borabora; Hawaii).

947

Holocentrus leo Kittitz, Denkw. Reis.
Mikronesien, vol. 2, p. 113, 1858
(Senjauins Island). — Smith and
Swain, Proc. U. S. Nat. Mus., vol. 5, p. 125,
188 (Johnston Island). — Jenkins,
Bull. U. S. Fish Comm., vol. 22, p. 441,
1902 (1903) (Hawaiian Islands).

Holocentrus leo Fowler, Proc. Acad. Nat.
Sci. Philadelphia, p. 234, 1904 (Thornton
Island).

Holocentrus (Sargocentron) leo Whitley, Journ.
Pan Pac. Res. Inst., vol. 3, no. 1, p. 11,
January - March 1928 (Santa Cruz Islands).

Holocentrum lion Valenciennes, Hist. Nat. Poiss., vol. 7,
p. 1831 (Society Islands; Vanikoro; Guam; Caroline).

Holocentrum andamense Day, Proc. Zool. Soc.
London, p. 686, 1870 (type locality, Andaman
Islands); Fishes of India, pt. 2, p. 172, ^{pl. 41, fig. 3}
1876 (type).

Holocentrus bowiei Jordan and Snyder, Proc.
U. S. Nat. Mus., vol. 29, p. 353, fig. 1, 1906 (type
locality, Tahiti).

Holocentrus caudimaculatus (not Rüppell)
Fowler, Mem. Bishop Mus., vol. 10, p. 98, 1928
(part; type of Holocentrus bowiei).

Depth $2\frac{2}{5}$ to $2\frac{4}{5}$; head $2\frac{1}{2}$ to $2\frac{3}{4}$, width 2 to $2\frac{3}{5}$. Snout 3 to 4 in head from snout tip; eye $3\frac{1}{4}$ to 5, greater than snout in young to $1\frac{3}{4}$ in snout with age, - greatly exceeds interorbital at all ages; maxillary reaches $\frac{2}{5}$ in eye in young, to front eye edge with age, expansion $1\frac{1}{2}$ to $1\frac{4}{5}$ in eye, length $2\frac{3}{4}$ to $2\frac{4}{5}$ in head from snout tip; interorbital $6\frac{3}{4}$ to 9, low, level; opercular spines 2, upper larger or 3 to $3\frac{1}{4}$ in eye; preopercular spine $1\frac{1}{4}$ in eye in young to $1\frac{2}{5}$ times eye with age. Gill rakers $7 + 13$, of which 4 above and 5 below. rudimentary; length $1\frac{1}{4}$ in gill filaments, which $2\frac{1}{5}$ in eye.

Scales 40 to 44 in lateral line to caudal base and 4 or 5 more on latter; 5 above, 9 below, 9 or 10

vol. 25, 1900, p. 418 (Putani River, Halmahera).

→ Pellegrin, Bull. Soc. Zool. France, vol. 30, 1905, p. 84 (Baie de Along, Tonkin); Bull. Mus. Hist. Nat. Paris, vol. 13, 1905, p. 84 (Baie de Foulcar, Madagascar).

Steindachner, Denkschr. Akad. Wiss. Wien, math.-naturwiss. Classe, vol. 71, pt. 1, 1907, p. 133 (Sheich عثمان and Gischin, ¹/_m Pearson, Ceylon Administr. Rep., 1912-13, p. E8; ✓ South Arabia) ¹/_m Ogilby, Mem. Queensland

→ Luncker, Mitteil. Naturh. Mus. Hamburg, vol. 21, 1903 (1904), p. 151 (Singapore).

Mus., vol. 5, 1916, p. 163 (references). ¹/_m

→ Fowler, Journ. Bombay Nat. Hist. Soc., vol. 33, No. 1, Sep. 30, 1920, p. 113 (Bombay); Mem. Bishop Mus., vol. 10, 1928, p. 215 (note).

¹/_m Barnard, Ann. South African Mus., vol. 21, pt. 2, 1927, p. 633 (Katil, Zululand coasts, Delagoa Bay, Mozambique).

949

predorsal, 5 rows on cheek. Scales with 1 or 2 low close set short medial basal points; row of 8 to 20 apical denticles and whole apical surface well pitted; circuli fine, basal, none extended apically.

D. XI, I, 14, I or XI, I, 15, I, spinous fin edge entire, third spine $1\frac{7}{8}$ to $2\frac{1}{8}$, third branched ray $1\frac{4}{5}$ to $2\frac{1}{10}$; A. IV, 10, I or IV, 11, I, third spine $1\frac{4}{5}$ to $2\frac{1}{5}$, first branched ray $1\frac{3}{4}$ to $2\frac{1}{10}$; caudal $1\frac{2}{3}$, forked, lobes rounded; least depth of caudal peduncle $4\frac{2}{5}$ to $4\frac{1}{2}$; pectoral $1\frac{1}{2}$ to $1\frac{2}{3}$; ventral $1\frac{1}{2}$ to $1\frac{4}{5}$.

Brown, paler to whitish below. Iris light or yellowish brown. Fins all uniformly pale brown.

Red Sea, Mauritius, Madagascar, Andamans, East Indies, Philippines, Queensland, Melanesia, Polynesia, Hawaii. Known by its high or deep

Monatsber. Akad. Wiss. Berlin, 1876,
 p. 438 (Mauritius). $\frac{1}{m}$ Bleeker, Atlas
 Ichth. Ind. Néerland., vol. 8, 1876-77,
 p. 122 (copies Pentapodus nubilus Cantor).
 $\frac{1}{m}$ Schmeltz, Cat. Mus. Godeffroy, No. 7, 1879, p. 40 (Samoa).
 $\frac{1}{m}$ Klunzinger, Sitz. Ber. Akad. Wiss.
 Wien, math.-naturwiss. Klasse, vol. 80,
 pt. 1, 1879, p. 356 (Port Darwin). $\frac{1}{m}$
Günther, Philos. Trans. Roy. Soc. London,
 vol. 168, 1879, p. 471 (Rodriguez). $\frac{1}{m}$
Kosman, Zool. Anzeiger, vol. 2, 1879,
 p. 22 (Red Sea). $\frac{1}{m}$ Günther, Rep. Voy.
 Challenger, vol. 1, 1880, p. 39 (Somerset).
 $\frac{1}{m}$ Klunzinger, Fische Roth. Meer., 1884, p.
 40, pl. 6, fig. 1. $\frac{1}{m}$ Meyer, An. Soc. Españ.
 Hist. Nat. Madrid, vol. 14, 1885, p. 19
 (North Celebes). $\frac{1}{m}$ Day, Fauna British
 India, Fishes, vol. 2, 1889, p. 39, fig. 15.
 $\frac{1}{m}$ Thurston, Pearl Fisher. Gulf of Manar,
 1890, p. 92 (Pamban). $\frac{1}{m}$ Steindachner,
 Abhandl. Senckenberg. Naturf. Gesellsch.,

body with elevated back, 5 scales above lateral line, greatly enlarged and elongated preopercle spine extended to or little beyond gill opening. The species is also one of the largest of its genus.

A reexamination of the type of Holocentrus bowiei Jordan and Snyder shows it to really be the present species and not Holocentrus caudimaculatus, with which I identified it in "Fishes of Oceania" 1928. Though Jordan and Snyder give 4 scales above lateral line it clearly shows 5 each side, though the black saddle behind the soft dorsal shown in their figure is not so greatly contrasted on the specimen.

Cuv¹⁷⁹

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Lethrinus nebulosus (Forsk.)

Vriena nebulosa Forsk., Descript.

Animal; 1775, pp. ^{sc.} XII, 52. Arabia. ^{+m}

Bonnaterre, Tabl. Ichth., 1788, p. 124

(Red Sea). ^{+m} Gmelin, Syst. Nat. Linn.,

vol. 1, 1789, p. 1304 (Arabia), ^{+m} Walbaum,

Artedii Pisc., vol. 3, 1792, p. 310 (compiled).

^{+m} Schneider, Syst. Ichth. Bloch, 1801,
p. 507 (compiled).

Lethrinus nebulosus Valenciennes, Hist.

Nat. Poiss., vol. 6, 1830, p. 284 (Massawa).

^{+m} Rüppell, Neue Wirbelth. Fische, 1835,

p. 118 (Tor). ^{+m} Günther, Cat. Fishes Brit.

Mus., vol. 1, 1859, p. 460 (Red Sea). ^{+m}

Playfair, Fishes of Zanzibar, 1866, p. 45
(Aden, Zanzibar, Seychelles). ^{+m}

Klunzinger, Verhandel. zool. botan. Gesellsch.
Wien, vol. 20, 1870, p. 754 (Koseir, Red Sea).

^{+m} Day, Fishes of India, pt. 1, 1875, p. 136,
pl. 33, fig. 4 (Aden; Sind). ^{+m} Peters,

One example. Cagayan Island.
May 31, 1909. Length 48 mm. An
interesting *Phrynichthys* stage,
with scales very rough, end of
snout slightly produced, and
rounded caudal lobes with
only slight median notch behind.

12950. Candaraman Island,
Balabac. January 4, 1909. Length
186 mm.

One example. Port Catton, Busuanga
Island. December 16, 1908. Length
123 mm.

22525 [1509]. San Pascual,
Burias Island. April 8, 1909.
Length 121 mm.

11326. San Roque, Leyte. July 29, 1909.
Length 61 to 73 mm. 24 examples.

2 examples. Tife Bay, Boro Island,
Dutch East Indies. December 10, 1909.

Length 65 mm.

4 examples. Tomahu Island. December 12,
1909. Length 36 to 41 mm.

9686, 22367. Uki, Boro Island.

December 9, 1909. Length 60 to 78 mm. 5 examples.

13707 and 13708. Cape Kait, Libani Bay,
Celebes. December 29, 1909. Length 71 to 74 mm.

23456. Limbe Strait, Celebes. November
10, 1909. Length 77 mm.

23547 and 23548. Talise Island, north
of Celebes. November 9, 1909. Length 70 to 71 mm.

One example. [1642.]

952

Length 228 mm.

21048. Capunayuyan, Mindanao. ⁵⁶¹
May 9, 1908. Length 74 mm.

14846. Casogoran, Malhon Island.
July 27, 1909. Length 66 mm.

8131. Basol Bay, west coast of Luzon.
May 9, 1909. Length 62 mm.

34 examples. Maagnas, Lagonoy Gulf,
Luzon. June 17, 1909. Length 40 to 61 mm.

5750. Mahinog, Camiguin Island,
between Leyte and Mindanao. August 3, 1909.
Length 86 mm.

5 examples. Port Ligo, Balabac. January
3, 1909. Length 54 to 80 mm.

1 example. Puerta Princesa, Palawan.
April 5, 1909. Length 42 mm.

23867. Rapurapur Island, east coast of
Luzon. June 22, 1909. Length 45 mm.

953

6869 to 6899. Danawan and Vitamil
Islands, vicinity Darvel Bay,
Borneo. September 26, 1909.
Length 105 to 133 mm.

22671. Labuandata Bay, Gulf
of Boni, Celebes. December 1909.
Length 99 mm.

22724. Talise Island. November
9, 1909. Length 123 mm.

1 example. Batangas market, Verde Island. June 7, 1908. Length 81 mm.

17033. Bisucay Island, near Cuyo. April 9, 1909. Length 68 mm. [1518.]

2 examples. Bolalo Bay, Palawan Island. February 21, 1908. Length 39 to 56 mm.

23800. Bolalo Bay. December 21, 1908. Length 81 mm.

6112, 6113, 6116. Bolinao Bay, west coast of Luzon. May 10, 1909. 39 examples.

15813, 15818, 23430.
15812, 23428, 23429, Butanan Island, east coast of Luzon. June 13, 1909. Length 68 to 88 mm.

15496. Butanan Island. June 15, 1909. Length 85 mm.

U. S. N. M., No. 16240. Fanning Islands.
Dr. J. H. Streets. Length 315 mm.

U. S. N. M., No. 29180. Johnston Island.
Length 288 mm. As Holocentrum leo.

U. S. N. M., No. 52359. Samoa. Bureau
of Fisheries. Length 73 to 274 mm.
Seven examples. The smallest differs
from any seen in the presence of a
subbasal-dark brown blotch on
first membrane of spinous dorsal
and little paler one on the second.
Its armature and anal spine
proportionately as in adult, besides
5 scales above lateral line.

U. S. N. M., No. 52740. Hawaii.
Bureau of Fisheries. Length 385 mm.

U. S. N. M., No. 53044. Tahiti.
H. P. Bowie. Length 213 mm. Type
of Holocentrus bowiei.

whitish spots may also form both above and below. Head gray brown, cheeks with some obscure darker mottling. Fins brown, verticals blotched darker. Paired fins pale. Iris yellowish brown.

East Indies, Philippines. Bleeker's figure differs from my examples in showing the median or axillary lateral white streak very pronounced and continuous. Also the yellowish spots on the dorsals and anals and caudal base appear to be much larger. The species may be easily distinguished by its color pattern, together with its very large mouth, slightly emarginate caudal and large conic teeth in the jaws. Most of my examples, at least the smaller, show a blackish blotch less than the eye, level with it and below lateral line opposite first third in pectoral.

U. S. N. M., No. 66088. Tuamotus.
Albatross Collection (A. 81). Length -
333 mm.

6 above, 16 below, 7 or 8 predorsal; caudal and pectoral with small basal scales. Scales with 12 to 14 basal radiating striae, with 1 to 10 incomplete auxiliaries; 136 to 145 apical denticles, with 6 to 12 transverse series of basal elements; circuli very fine.

D. X, 9, I, fourth spine $2\frac{7}{8}$ to 3 in head, fourth ray $2\frac{1}{8}$ to $2\frac{1}{5}$; A. III, 8, I, third spine $2\frac{7}{8}$ to 3, fourth ray $2\frac{1}{5}$ to $2\frac{1}{2}$; caudal $1\frac{1}{6}$ to $1\frac{2}{5}$, moderately emarginate; least depth of caudal peduncle $2\frac{7}{8}$ to 3; pectoral $1\frac{1}{6}$ to $1\frac{1}{5}$; ventral $1\frac{2}{5}$ to $1\frac{1}{2}$.

Brown, little paler below. Most scales on back and sides each with small pale whitish spot and along middle of sides each median at least forming more or less complete whitish axial line. Several other variably incomplete whitish lines or rows of

Holocentrus ascensionis (Osbeck)

Perca adscensionis Osbeck, Reis. Ostind.
Chin., p. 388, 1765 [type locality;
 Ascension Island [Atlantic Ocean] (error).
 — Bonnaterre, Tabl. Ichth., p. 132,
 1788 (Ascension Island). — Walbaum,
Artedi Pisc., vol. 3, p. 344, 1792
 (copied).

Perca ascensionis Gmelin, Syst. Nat.
Lin., pt. 1, p. 1318, 1789 (copied).

Amphacanthus adscensionis Schneider,
Syst. Ichth. Bloch, p. 210, 1801
 (copied).

Lutjanus ascensionis Lacépède, Hist.
Nat. Poiss., vol. 4, pp. 176, 198, 1802
 (Ascension Island).

Holocentrus ascensionis Suckow,
Naturges., vol. 4, p. 532, 1799.

957

Holocentrus accensionis Jordan and
Evermann, Bull. U. S. Nat. Mus., no. 47, pt.
1, p. 848, 1896 (compiled). ^{Gilbert, Proc. Wash. Acad. Sci., vol. 2, p. 165, August 20, 1900} Jordan

— Evermann and Marsh, Bull. U. S. Fish
Comm., vol. 20, pt. 1, p. 118, pl. 3, 1900 (1902)
(San Juan, Aguadilla, Puerto Real, Arroyo,
Hucare, Isabel Segunda, San Gerónimo).
— Evermann, Jour. ver. 1, no. 1, p. 42, 1905

(Hungry Bay, off Ireland Island, Mansuch
Island, Flatts, Well Bay, Hayward's
Bay, Smith's Cove, Great Shoal, Long
Bay, Old Ferry, Great Bay, Ely's Harbor,
Bermuda).

— Fowler, Proc. Acad. Nat.
Sci. Philadelphia, p. 129, 1919 (Rio Janeiro),
p. 137 (St. Martin's), p. 144 (St. Croix), p.
150 (Fortune Island, Bahamas); Proc.
U. S. Nat. Mus., vol. 56, p. 267, 1919
(Gaboon, West Africa); Proc. Acad. Nat.
Sci. Philadelphia, p. 153, 1919 (Key West);
p. 251, 1926 (Captiva Pass, Florida).

— Starks, Stanford Univ. Publ., Univ. Ser., p. 41,
1913 (natal, Brazil).

— Nichols, N. Y. Acad. Sci., Sci. Surv.
Porto Rico and Virgin Is., vol. 10, pt. 2,
p. 226, fig. 76, 1929.

Pectoral with upper rays yellow,
lower clear. Length 450 mm. (Agilby).
Queensland.

Holocentrum ascensionis Cuvier,
Hist. Nat. Poiss., vol. 3, p. 212, 1829
(copied).

^{any} Pteroglanis in this Proceedings
preoccupied by Eigenmann and
Pierson 1924 (Indiana University
Studies no. 64) for a South American
cluroid. I therefore propose
teropsoglanis new genus (type
teropsoglanis horai new species) as ^{diagnosed,}
^{and figured} described, in the above mentioned
paper.

8/22/11 - 56

Amure. B.

Holocentrus adscensionis Fowler, Proc.
Acad. Nat. Sci. Philadelphia, p. 225, 1904
(Rio Janeiro; Santo Domingo).

Holocentrus adscensionis Fowler, Proc. Acad.
Nat. Sci. Philadelphia, p. 401, 1916 (Colon,
Canal Zone); 1917, p. 131 (Colon); 1928, p.
455 (Turtle Rocks, Bahamas), p. 457
(Port au Prince, Haiti), p. 463 (Guánica,
Porto Rico), p. 469 (St. Lucia).

~~Hol~~

Bodianus pentacanthus Bloch, Naturges.
Ausl. Fische, vol. 4, p. 40, pl. 225, 1790
(type locality, Brazil).

Holocentrus pentacanthus Jordan and Gilbert,
Bull. U. S. Nat. Mus., no. 16, p. 459, 1882
(1883) (compiled).

Holocentrus sogo Bloch, Naturges. Ausl.
Fische, vol. 4, p. 61, pl. 232, 1790 (type locality,
Africa).

Perca rufa Walbaum, Artedi Pisc., vol. 3, p.
351, 1792 (type locality, Bahama).

Sciaena rubra (not Forsk.) Schneider,
Syst. Ichth. Bloch, p. 82, 1801 (on Perca
rubra Catesby, Hist. Carol., vol. 2, pl. 3, lower
figure, 1732, Carolina, Florida, Bahamas).

Amphiprion matejuelo Schneider, Syst.
Ichth. Bloch, p. 206, 1801 (type locality, Cuba).

Bodianus jaguar Lacépède, Hist. Nat.
Poiss., vol. 4, p. 286, 1802 (type locality,
Brazil).

upper eye; gill opening edged with
scarlet and brassy; iris silvery.
Dorsals clear olive anteriorly, becomes
vermilion posteriorly, rays more or
less orange and tips of spinous
membranes vermilion. Anal pale,
membranes and soft rays with orange
shades. Caudal dusky vermilion.
Pectoral hyaline orange, axil dusky,
some scarlet at base of first ray.
Ventral pale.

75503 U.S.N.M. Nagasaki, Japan.

Jordan and Snyder. Length 233 to 247mm.

2 examples.

Holocentrum longipinne ^{Cuvier} ~~Valenciennes~~, Hist. Nat. Poiss., vol. 3, p. 185, 1829 (type locality, Brazil; Porto Rico; St. Thomas; Santo Domingo; Martinique). — ~~Valenciennes~~, Hist. Nat. Poiss., vol. 7, p. 496, 1831 (St. Helena).
 — Günther, Cat. Fish. Brit. Mus., vol. 1, p. 28, 1859 (Cuba, Jamaica, St. Christophers, West Indies, Bahia, America); Proc. Zool. Soc. London, p. 225, 1868 (St. Helena). — Helliss, St. Helena, p. 105, pl. 20, fig. 2, 1875. — Günther, Rep. Voy. Challenger, vol. 7, pt. 6, p. 5, 1880 (Ascension Island). — Osorio, Jorn. Sci. Acad. Lisboa, ser. 2, vol. 3, p. 244, March 1895 (Bom alimento). — Cunningham, Proc. Zool. Soc. London, p. 97, 1910 (St. Helena).
 — Clark, Proc. Roy. Phys. Soc. Edinburgh, vol. 19, p. 391, 1913 (St. Helena), p. 385 (Ascension Island).

Holocentrus striatus Gray, Cat. Fish. Gronow, p. 173, 1854 (type locality, Antilles).

Holocentrus rostratus Gray, Cat. Fish. Gronow, p. 173, 1854 (type locality, Near the Equator).

963

Holocentrum osculum Poey, Mem. Hist.
Nat. Cuba, vol. 2, p. 156, 1860 (type
locality, Cuba).

Holocentrus osculus Jordan and Evermann,
Bull. U. S. Nat. Mus., No. 47, pt. 1, p. 853,
1896 (compiled).

Holocentrum perlatum Poey, Mem. Hist.
Nat. Cuba, vol. 2, p. 157, 1860 (type locality,
Cuba).

Holocentrus meeki J. H. Bean, Field Mus.
Pub., vol. 104, Zool. Ser. 7, no. 1, p. 42, fig.
2, 1905 (type locality, Hayward's
Bay, Bermuda) . . f.

(964)

Depth $2\frac{3}{4}$ to $3\frac{1}{2}$; head $2\frac{4}{5}$ to $3\frac{1}{5}$,
width $1\frac{3}{4}$ to 2. Snout $3\frac{7}{8}$ to 4 in
head from snout tip; eye $2\frac{2}{3}$ to $3\frac{1}{2}$,
greater than snout or interorbital;
maxillary reaches $\frac{1}{5}$ to $\frac{2}{5}$ in eye,
expansion $1\frac{7}{8}$ to $2\frac{3}{5}$ in eye, length
 $2\frac{1}{5}$ to $2\frac{3}{5}$ in head from snout tip;
interorbital $3\frac{7}{8}$ to $5\frac{2}{3}$, low, nearly
level; opercular spines 2, upper
larger; preopercle spine $1\frac{3}{4}$ to
 $2\frac{1}{3}$ in eye. Gill rakers ^{7 to} 9 + 15 ^{to} ~~16~~
¹⁶, of which 3 or 4 above and 2 or 3
below rudiments, equal gill filaments
or ^{2 to} $2\frac{1}{2}$ ⁱⁿ of eye.

Scales 48 to ² 58 in lateral line
to caudal base and 4 more on latter;
^{4 or} 5 above, ^{or 8} 7 below, 7 to 11 predorsal
forward to occiput, 5 rows on
cheek. Scales ^{without or} with 4 or 5 basal
points; apical denticles ⁸ 39 to 49;

935

Zanclus canescens (Linnaeus).

- Chaetodon canescens Linnaeus, Syst. Nat.,
ed. 10, 1758, p. 272. East Indies. — Linnaeus,
l.c., ed. 12, 1766, p. 460. — Gmelin, Syst.
Nat. Lin., 1789, p. 1240^("America"). — Walbaum, Arted.
Fisc., vol. 3, 1792, p. 443 (in Linnaeus). —
Forster, Fauna Indica, 1795, p. 14. — Schneider,
Syst. Ichth. Bloch, 1801, p. 219 (Indies).
Chaetodon canescens Bonnaterre, Tabl. Ichth.,
1788, p. 80, plate 43, fig. 166 (East Indies).
Pomacanthus canescens Lacépède, Hist. Nat.
Pois., vol. 4, 1802, pp. 517, 519 ("South America").
Zanclus canescens Günther, Cat. Fish. Brit.
Mus., vol. 2, 1860, p. 493 (copied). — Bleeker,
Atlas Ichth. Ind. Néerl., vol. 9, 1877, p. 78,
plate (4) 366, fig. 3 (Celebes, Amboina).
— Jordan and Fowler, Proc. U. S. Nat. Mus.,
vol. 25, 1902, p. 549 (Misaki). — Franz,
Abhand. K. Bayer. Akad. Wiss., band 4,
suppl. band 1, 1910, p. 50 (Aburatsubo).

basal striae fine, largely vertical and parallel.

D. XI, ~~15~~⁴, I ~~to~~ 16, I, third spine 2 to $2\frac{1}{8}$ in total head length, third ray $1\frac{2}{5}$ to $1\frac{1}{2}$; A. IV, 10, I to 12, I, third spine $1\frac{3}{4}$ to $2\frac{1}{8}$, second ray $1\frac{3}{5}$ to $1\frac{3}{4}$; caudal widely forked, long slender lobes pointed, fin $2\frac{1}{2}$ to $3\frac{1}{5}$ in rest of fish; least depth of caudal peduncle $4\frac{1}{5}$ to $4\frac{1}{2}$ in total head, long, slender; pectoral $1\frac{2}{5}$ to $2\frac{1}{5}$; ventral 1 to $1\frac{1}{3}$.

Light brown, nearly uniform. In life bright red. Back pale brown in alcohol, silvery white below. Iris white. Fins pale to whitish. Tropical Atlantic.

Genus Zanclus Cuvier.

Zanclus Cuvier, Hist. Nat. Poiss., vol. 7, 1831,
p. ¹⁰²77. Type Chaetodon cornutus Linnaeus,
monotypic.

Gonopterus Gray, Cat. Fish. Gronow, vol. 2,
1854, p. 77. Type Gonopterus morens Gray,
monotypic.

Gnathocentrum Guichenot, Ann. Soc.

Maîne et Loire, vol. 9, 1866, p. 4. Type
Gnathocentrum centrognathum Guichenot,
monotypic.

Body deeply ovoid. Head very deep.
Snout and muzzle strongly produced.
Teeth in jaws biserial. Opercle without
spine. Air bladder large. Scales very
small or indistinguishable. Head scaly
above and laterally. Lateral line continuous
to caudal base. Soft dorsal and anal
anteriorly elevated. Paired fins subequal.

Indo-Pacific.

U. S. N. M., no. _____. Havana, Cuba.
William Stimpson. Length 192 to 210 mm.
Two examples.

U. S. N. M., no. 2711. Cuba. Prof. F.
Poey. Length 198 to 239 mm. Two examples.

U. S. N. M., no. 6722. Bahamas. Dr.
Bryant. Length 234 to 248 mm. Two
examples.

U. S. N. M., no. 6928. Jamaica. C. B.
Adams. Length 175 mm.

U. S. N. M., no. 6954. Cuba. Prof. F.
Poey. Length 198 mm.

U. S. N. M., no. 10382. Bermuda. Dr. G.
B. Goode. Length 356 mm.

U. S. N. M., no. 12545. Cuba. Prof. F. Poey.
Length 270 mm.

U. S. N. M., no. 12550. Cuba. Prof. F. Poey.
Length 183 to 232 mm. Two examples.
Scales 48 to 50 + 5 in lateral line. As
Holocentrum perlatum.

832
Holacanthus dimidiatus Bleeker.

Holacanthus dimidiatus Bleeker, Act. Soc.
Sci. Ind. Néerl. (Étude. Viss., Amboin), vol.
8, 1860, p. 11. Amboina.

Chaetodontophus dimidiatus Bleeker, Atlas
Ichth. Ind. Néerl., vol. 9, 1877, p. 57, plate
(7) 369, fig. 4 (Amboina).

Very similar to Holacanthus melanosoma
but differs slightly in color, the back
lighter than the contrasted dark lower
half of the body, also the caudal uniformly
yellow. Reaches 166 mm. according to Bleeker,
who mentions 5 examples.

U. S. N. M., no. 13048. Cuba. Prof. J. Poey. Length 229 mm. As Holocentrus matejuelo.

U. S. N. M., no. 16804. Bermuda. Central Aquarium. Length 193 mm.

U. S. N. M., no. 21212. Santo Domingo. W. M. Gabb. Length 200 to 203 mm. Two examples.

U. S. N. M., no. 21232. Bermuda. J. M. Jones. Length 48 to 94 mm. Six examples.

U. S. N. M., no. 24788. Cuba. Prof. J. Poey. Length 225 mm. Scales 50+4. As Holocentrus oculus.

U. S. N. M., no. 24947. Key West, Florida. Albatross Collection. Length 154 mm.

U. S. N. M., no. 26580. Key West. Vilas Stearns. Length 305 mm.

U. S. N. M., no. 29860. West Indies. Dr. Nicholls. Length 205 mm.

831

its straight edge vertical and posterior.
Paired fins blackish.

East Indies. Previously known only
from Bleeker's type, which 120 mm.
and Gunther's record.

1 example. Doc Pan Island. January 7,
1910. Length 80 mm. One example found
stomach of Varicorhinus (A 1527, length
450 mm).

*
5147. Jolo market. March 6, 1908.
Length 130 mm.

4349 [133] D. 5139. Jolo Island.
February 14, 1908. Length 61 mm.

U. S. N. M., no. 32049. Jamaica.
Institute of Jamaica. Length 218 mm.

U. S. N. M., no. 33689. West Indies.
J. C. Brevoort. Length 310 mm. As
Holocentrum pentacanthus.

U. S. N. M., no. 37424. Cuba. Prof. F.
Poey. Length 69 mm. As Holocentrus
longipinne.

U. S. N. M., no. 38430. Bahamas.
Albatross Collection. Length 202 mm.

U. S. N. M., no. 38431. Nassau, Bahamas.
Bureau of Fisheries. Length 191 to 290 mm.
Four examples.

U. S. N. M., no. 38719. Key West, Florida.
Albatross Collection. Length 251 mm.

U. S. N. M., no. 41304. St. Lucia, West
Indies. Albatross Collection 55. Length
148 mm.

U. S. N. M., no. 43387. Bahia, Brazil.
Albatross Collection. Length 220 mm.

830

Depth $1\frac{7}{8}$ to 2; head $3\frac{1}{6}$ to $3\frac{2}{5}$, width $1\frac{1}{2}$ to $1\frac{4}{5}$. Snout $2\frac{4}{5}$ to $3\frac{1}{8}$ in head from snout tip; eye $2\frac{3}{4}$ to $3\frac{2}{5}$, $1\frac{1}{2}$ in snout to little longer than snout in young, equals interorbital to little greater in young; maxillary $3\frac{1}{4}$ to $3\frac{3}{4}$ in head, reach at least to front nostril; interorbital $3\frac{1}{4}$ to $3\frac{2}{3}$, broadly convex; preopercle with upper edge $3\frac{2}{3}$ to $4\frac{1}{4}$. Gill rakers $4 + 11$, lanceolate, $\frac{1}{3}$ of gill filaments, which $1\frac{1}{2}$ in eye.

Scales 60 to 70 in median lateral series from gill-opening to caudal base; 18 or 19 scales above lateral line, 48 to 50 below. Scales with 1 to 3 basal radiating striae; apical denticles 15 to 20, each with long slender rootlet; circuli very fine.

D. XIII, 17, I or 18, I, last spine $1\frac{3}{5}$ to $1\frac{7}{8}$ in total head length, fifth ray $1\frac{1}{2}$ to $1\frac{3}{4}$; A. III, third spine $1\frac{1}{3}$ to $1\frac{3}{4}$, seventh ray $1\frac{2}{5}$ to $1\frac{1}{2}$; least depth of caudal peduncle $2\frac{1}{2}$ to $2\frac{3}{5}$; caudal rounded convexly behind, $1\frac{2}{5}$; pectoral $1\frac{2}{5}$; ventral $1\frac{1}{8}$ to $1\frac{1}{4}$.

Largely deep dusky-brown. Occiput, front of head, snout above and interorbital with slightly paler ground-color, marked with dark reticulating lines. Iris dull yellowish. Dorsals and anals nearly blackish, except hind edges of soft fins which bordered whitish. Caudal white with large median semicircular blackish blotch,

U. S. N. M., No. 44118. West Indies.
Dr. H. E. Ames. Length 70? mm.
In poor preservation.

U. S. N. M., No. 50134. Porto Rico, West
Indies. U. S. Fish Comm. (1944).
Length 245 mm.

U. S. N. M., No. 76009. Nassau, Bahamas.
Albatross Collection. April 23, 1886.
Length 280 mm.

U. S. N. M., No. 89638. Haiti. W. M.
Perrygo. Length 188 to 204 mm. Two
examples.

U. S. N. M., 89639. Big Bay, Haiti.
W. M. Perrygo. April 23, 1930. Length
50 mm.

U. S. N. M., 1 example. Castle Harbor,
Bermuda. L. J. Nowbray. October 14,
1906. Length 74 mm. As Holocentrus
meeki.

94

A546. Sulade Island. September 17,
1909. Length 246 mm.

5723, 8397, 8398. Surigao, Mindanao.
May 8, 1908. Length 168 to 287 mm.

7151. Teomabal Island. September 18,
1909. Length 185 mm.

1752. Tili, Lubang Island. July 14,
1908. Length 160 mm.

5132. Usada Island near Jolo. March 5,
1908. Length 230 mm.

6644, 17719. Buradero Bay, Mindoro.
July 23, 1908. Length 27 to 222 mm.
10 examples. The two blackish lateral
blotches present even in the smallest
examples.

8519. Verde del Sur Island. April 6, 1909
Length 264 mm.

7115. West coast Palani Island. November
18, 1908. Length 177 mm.

Holocentrus hastatus ^{Cuvier.} ~~Valenciennes~~ 970

- Holocentrum hastatum ^{Cuvier} ~~Valenciennes~~, Hist. Nat. Poiss., vol. 3, p. 208, 1829 (type locality, West Africa). ^{pl. 59,} Duméril, Nouv. Arch. Mus. Hist. Nat. Paris, vol. 10, p. 262, 1858 (Goree, St. Jago, Cape Verde). Troschel, Arch. Naturg., — Günther, Cat. Fish. Brit. Mus., vol. 1, p. 39, 1859 (no locality). ^{rien, 2).}
- Guimaraes, Journ. Soc. Math. Acad. Lisboa, p. 31, 1882 (St. Jago, Cape Verde).
- Steindachner, Denks. Akad. Wiss. Wien, vol. 45, pt. 1, p. 1, pl. 1, fig. 1, 1882 (Goree).
- Rochebrune, Faune Senegambie, Poiss., p. 37, 1883-85 (St. Louis; Goree).
- Roule, Rés. Camp. Sci. Monaco, vol. 52, p. 45, 1919 (south west of St. Lucia Island, Cape Verde, 15 meters).

Holocentrus hastatus Fowler, Proc. U. S. Nat. Mus., vol. 56, p. 279, 1919 (Loando, Angola).

Holocentrum à grosses épines Valenciennes, Hist. Nat. Poiss., vol. 7, p. 499, 1831 (Gorée).

Holocentrus hastatus ^{Cuvier.} ~~Valenciennes~~ 970

Holocentrum hastatum ^{Cuvier} ~~Valenciennes~~, Hist.
nat. Poiss., vol. 3, p. 208, 1829 (Type
locality, West Africa). ^{pl. 59} Duméril,
Nouv. Arch. Mus. Hist. nat. Paris,
vol. 10, p. 262, 1858 (Goree, St. Jago,
Cape Verde). — Troschel, Arch. Naturg.,
p. 200, 1866 (Cape Verde Islands). —
Steindachner, Denks. Akad. Wiss. Wien,
vol. 44, pt. 1, p. 20, 1882 (Senegambia).
— Guimaraes, Jorn. Soc. Math. Acad.
Lisboa, p. 31, 1882 (St. Jago, Cape Verde).
— Steindachner, Denks. Akad. Wiss. Wien,
vol. 45, pt. 1, p. 1, pl. 1, fig. 1, 1882 (Goree).
— Rochebrune, Faune Senegambie,
Poiss., p. 37, 1883-85 (St. Louis; Goree).
— Roule, Rés. Camp. Sci. Monaco, vol.
52, p. 45, 1919 (south west of St. Lucia
Island, Cape Verde, 15 meters).

Holocentrus hastatus Fowler, Proc. U. S.
Nat. Mus., vol. 56, p. 279, 1919 (Loando,
Angola).

Holocentrum à grosses épines Valenciennes,
Hist. nat. Poiss., vol. 7, p. 499, 1831 (Gorée).

AMHERST
 BATES
 BOSTON COLLEGE
 BOWDOIN
 BROWN
 CALIFORNIA
 CARNEGIE TECH
 COLBY
 COLGATE
 COLLEGE
 CITY OF NEW
 COLUMBIA
 CORNELL
 DARTMOUTH
 FORDHAM
 GEORGETOWN
 HARVARD
 HAVERFORD
 HOLY CROSS
 JOHNS HOPKINS
 LAFAYETTE
 LEHIGH
 MAINE
 MANHATTAN
 M. I. T.
 MICHIGAN
 MICHIGAN STATE
 NEW YORK UNIV
 PENNSYLVANIA ST
 PENNSYLVANIA
 PITTSBURGH
 PRINCETON
 RUTGERS
 SOUTHERN CALIF
 STANFORD
 SWARTHMORE
 SYRACUSE

Cape
 p. 200, 1866 (Cape
Steindachner,
vol. 44, pt. 1, p.
Günmaral
 Lisboa, p. 31,
Steindachner

971

Depth 3 to $3\frac{1}{3}$; head 3 to $3\frac{1}{3}$, width 2 to $2\frac{1}{8}$. Snout $3\frac{7}{8}$ to $4\frac{1}{5}$ in head; eye 3 to $3\frac{1}{6}$, greater than snout or interorbital; maxillary reaches $\frac{1}{3}$ to $\frac{2}{5}$ in eye, expansion $1\frac{3}{4}$ to 2 in eye, length $3\frac{7}{8}$ to $4\frac{1}{5}$ in head; interorbital $2\frac{3}{4}$ to $3\frac{1}{5}$, low, depressed medially; 2 rather short opercular spines, upper little longer, $3\frac{1}{4}$ to $3\frac{4}{5}$ in eye; preopercular spine 2 to $2\frac{1}{8}$ in eye. Gill rakers 9+14, lanceolate, of which 4 upper rudimentary, long as gill filaments or $\frac{1}{2}$ eye.

Scales 48 to 51 in lateral line to caudal base and 6 to 8 on latter; 5 above, 8 below, 8 predorsal, 5 rows on cheek. Scales with 4 or 5 basal lobes; row of 16 to 18 apical serrae; circuli fine, none apical.

D. XI, 14, I or XI, 15, I, fourth spine $1\frac{7}{8}$ to 2 in head, second ray $1\frac{1}{2}$ to $1\frac{3}{5}$; A. IV, 10, third spine $1\frac{4}{5}$ to 2, second ray $1\frac{3}{5}$ to 2; caudal $1\frac{1}{3}$ to $1\frac{2}{5}$, forked, lobes pointed; least depth of caudal peduncle $3\frac{2}{5}$ to 4; pectoral $1\frac{1}{2}$ to $1\frac{3}{5}$; ventral $1\frac{1}{4}$ to $1\frac{1}{3}$.

Back brown, well contrasted with lower surface, which pale yellowish to brassy. Iris yellowish white. Fins pale brown. Spinous dorsal with dark brown vertical area on membrane of each spine, front border paler and terminal border darker.

West Africa.

U. S. N. M., No. 42303. St. Paul de Loando? W. H. Brown. Eclipse Expedition. Length 85 to 96 mm. Six examples.

ventral 1 to $1\frac{3}{5}$.

Generally white to yellowish white. Broad black band includes predorsal and interorbital down with pectoral base, sides of breast to ventral bases. Within limits of same gray line from supraoccipital to upper front eye edge; one from predorsal to postocular with a third parallel down to opercle and both extended below, postocular to ventral origin and other to vent. Second broad blackish band from upper front part of soft dorsal vertically down across most of anal to front lobe of soft fin; submarginal posterior vertical line within black band over tail. Caudal largely blackish, hind edge whitish. Dark triangle over snout, angle directed down. Pectorals pale. Ventrals black. Iris dark.